

# InfoWorld

The Newsweekly for Microcomputer Users

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Escape from 'Castle Wolfenstein'

IBM Spawns Cottage Industry

COMDEX Wrap-up

UNIX Price Falls

CP/M on a Chip



NEWSPAPER

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# InfoWorld

The Newsweekly for Microcomputer Users

## A fitting end to the year of the personal computer

### COMDEX '81 in Las Vegas bigger than ever

By John Markoff, IW Staff

LAS VEGAS, NV—With the rest of the American economy deeply mired in recession, the giant COMDEX '81 provided a fitting counterpoint, proving that 1981 has truly been "the year of the personal computer."

This year's COMDEX spilled out beyond the walls of the mammoth Las Vegas Convention Center, as dealers and distributors congregated with manufacturers of hardware, software and peripherals in an atmosphere that can only be described as euphoric.

Attendance for this year's show ran close to 25,000, and more than 648 companies occupied a total of 1650 booths, giving those who wanted to see it all the almost unmanageable task of covering more than two miles of aisles.

The exhibition hall itself took on a

circus atmosphere, as magicians, mimes and robots that danced competed with each other to attract attention to exhibitors' booths.

There seemed to be no end to the lengths that some companies would go to to grab innocent passersby and give them a sales pitch. One company brought in a military field tent and had a General Patton look-alike give an animated briefing on "OEM wars" every couple hours. Several other corporations constructed immense two-story booths with upper floors for private tête-à-têtes.

Fortune Systems Corporation's 3216 was clearly the technological talk of COMDEX. The venture-capital-financed startup company brought its 68000-based desktop computer with 128K, UNIX and 1.5 megabytes of floppy-disk capacity in under \$5000,



IBM Chief Economist, Dr. Alvin J. Karchere, spoke at COMDEX '81. He said the personal-computer industry would survive a recession.

and as a result the Fortune booth was packed for the entire four days of the show.

Other 16-bit systems that drew in-

terest included the Three Rivers Perq; Convergent Technology's 8086-based system; Tricom's Z8001; the Victor 9000; and Forward Technology's 68000-based CPU board, which is a cousin of the Stanford SUN personal work station.

The Perq was particularly exciting because Three Rivers seems to have packaged many of the research advances made at Xerox's Palo Alto Research Center. By including such features as a Smalltalk-like programming environment and an Ethernet network, Three Rivers has created a system that may compete directly

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## Digital Research puts CP/M on a chip

### Announces new managers and acquisition of software suppliers

By Maggie Canon and Michael Swaine, IW Staff

LAS VEGAS, NV—COMDEX was the occasion of an official announcement by Gary Kildall, president of Digital Research; Intel will be providing a silicon version of the CP/M-86 operating system for the Intel 8086 16-bit processor.

The announcement was made at a

press conference at which Kildall also announced Digital Research's acquisition of MT Microsystems, supplier of Pascal/MT+. Kildall came to the press conference directly from a well-attended conference on 16-bit technology at which the big news was the major price reduction on Digital Research's 16-bit competitor, the UNIX

operating system.

According to Kildall, the new firmware version of CP/M will not require a disk, making it well suited for remote computers interconnected in a local distributed network and sharing a large-capacity disk drive. This product could bring down the cost of such network nodes, since disk drives cost more than semiconductor chips.

The new chip is a very-large-scale integrated VLSI circuit that contains 64K of read-only memory (ROM). It is designed to work with the Intel iAPX-86 16-bit microprocessor.

Further cementing its relations with Intel, the prime source of the 8080 and 8086 microprocessors, Digital Research has agreed to supply Intel with customized versions of CP/M, CP/M-86 and MP/M-86 for Intel's microcomputer boards and systems.

In this context, it is interesting that Intel's marketing manager for OEM modules operation, John Rowley, has left to become Digital Research's chief operating officer.

Rowley's appointment is part of Digital Research's preparation for the

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## Context gives managers an MBA

By Maggie Canon, IW Staff

LAS VEGAS, NV—Context Management Systems, a newly formed software company, has announced a sophisticated management program designed to run on the IBM Personal Computer.

Context's Master of Business Administration (MBA) integrates program modules including an electronic spread sheet, a data-base manager, a Pascal-like editor, graphics and communications capabilities.

The MBA may be indicative of the emergence of a new generation of software designed to take advantage of rapidly expanding volatile memories in personal computers. The program

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## W. Electric cuts UNIX prices

By Michael Swaine, IW Staff

LAS VEGAS, NV—The day before the doors opened on the COMDEX show here, Western Electric announced a major adjustment in its pricing of the UNIX operating system, a change that should make it competitive in the microcomputer arena.

The new pricing affects the cost of source code, distribution licensing and royalties. The price of a source license has gone up from \$28,000 to \$43,000, while a distribution license has dropped in price from \$50,000 to \$25,000, with the full amount now being credited against royalties. The royalties are new and start at \$100 for a single user, or \$250 for from 2 to 16

users.

The overall effect is expected to benefit microcomputer manufacturers that are using or planning to use UNIX on their systems, namely 16-bit manufacturers. An example of such a company is Plexus, whose president, Robert Marsh, is also the founder of a user group, the UNIX users' society.

"The low end clearly was helped," according to Marsh, who expects the savings to be passed on to the users of these systems. The president of Codat, another 16-bit system manufacturer, said it "adds to our credibility, not having to charge a third of the price of the system for the operating

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### SPECIAL SECTION

"As data-base-management software for micros grows in power and complexity, more and more of that software has earned the right to be called a data base—even if it only simulates a true data base." Sound interesting? Please turn to page 26 for more on data bases.



This One



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# Data-base-management systems: software tool of the future

By John Markoff and Michael Swaine, *IV Staff*

**LAS VEGAS, NV**—The big news at COMDEX this week was hardware, but it was also evident that significant advances have taken place in the area of microcomputer software as well.

Several manufacturers introduced data-base-management systems with program-writing capabilities, giving the dealers, distributors and manufacturers at the show a glimpse of a new generation of software-development tools for nonprogrammers.

"The beauty of it is that we can write applications programs so much faster," said George Tate, president of Ashton-Tate, distributor of the well-known dBASE II assembly-language relational-data-base-management system. "It's simpler to program systems for the public."

MicroPro International Corporation, maker of the popular WordStar word-processing software, introduced a report generator/file processor named InfoStar.

"All the user does is specify the format of the data; InfoStar writes the code," explained MicroPro's president, Seymour Rubinstein. "Under the specification process, users design the format of the report on the screen and then answer a series of questions about the data relationships."

Also in evidence were data-base managers configured as program generators. Infotecs, a New Hampshire systems manufacturer, introduced the Control Center 2, a data-base-management system that allows programmers to create custom applications software. Control Center 2 is based on 12 program modules that can be individually tailored to a specific software program.

## New trends evident

"We're finally arriving at the point where software will become a fixed cost," said Tim Sullivan, Infotecs' director of dealer programs. "We have done this by working from the opposite direction of most data-base-management designers. We began with the desired applications program and worked back from there."

One example of the "friendly front end" emerging for data-base-management systems at COMDEX was Quickscreen, an interactive screen-building product designed to be used with CP/M systems.

Marketed by Fox & Geller Associates of New Jersey, this simple program generator can sit on top of the dBASE II and FMS80 data-base systems or it can be used with Microsoft BASIC and CBASIC. Designer Jacob Geller said that Quickscreen "required no programming knowledge for the BASIC versions" and that a typical screen could be created in less than three minutes.

Another clear trend is the move toward developing data-base systems that employ English-like commands.

Clyde Klock, director of marketing and sales for Condor Computer Corporation, producer of a low-cost relational-data-base system, said Condor is planning to extend the system's capabilities significantly.

"We're going to change the way we talk to computers," he claimed. "We've been using data the way programmers told us we had to; now we're going to use it the way businessmen say they want to."

Tate goes a step further and argues that while dBASE II can now reach only 20% of the potential market—that is, it appeals mostly to programmers and sophisticated computer users—Ashton-Tate plans an aggressive pursuit of nonprogramming business users. In order to reach this market, the company plans to incorporate its

data-base system into a software environment that will include word-processing and business applications.

Joaquin Miller, vice-president of Pacific Software, manufacturer of Sequitur, a data-base-management system for UNIX users, agrees: "People don't want to generate their own programs. In fact, most people don't even want a computer, they simply want to get their work done."

## New software technologies

Miller feels that the future of data-base-management systems lies in the

development of powerful applications programs. Sequitur comes with a fully integrated editor and with unlimited fields that do not limit text.

Data-base-system designers point to new software technologies that will overcome the handicaps inherent in current data-base systems. According to Efram Lipkin, system designer for Pacific Software, "In the future we will be able to throw out relational models and forget the flat file as well. They will be replaced by a new model of data known as an entity relational model."

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## More programming flexibility promised with new UCSD p-system

By John Markoff, *HW Staff*

LAS VEGAS, NV—Portability is a topic that gets Al Irvine's blood flowing. The affable, bearded director of engineering at SofTech Microsystems likes nothing better than a chance to extol the virtues of the UCSD p-system, a programming environment that today allows software portability between more than 20 micros and minicomputers.

"Working in the UCSD-p environment will bring about a real increase in the quality of software," Irvine argues. "With this system, lines of code don't have to be rewritten when a program

is transferred between machines. Now programmers can concentrate on perfecting the programs that they have already written, rather than simply reworking old ones."

The concept of an entire programming environment like UCSD-p is necessary for true portability, he says. When you use the UCSD p-system on a new machine, everything is moved—including editors, file handlers, compilers and operating systems.

This is true portability, Irvine laughs. "Being a little bit nonportable is like being a little bit pregnant."

The unique quality of the p-system

is that it utilizes a pseudomachine, or "p-machine." This is a machine-independent code into which programs, rather than the native code of the computer that is being used, are compiled. A p-machine emulator—a program in the native code of the computer—is provided for each system on which the UCSD p-system runs. This hooks to the native machine language of each computer.

SofTech Microsystems has an exclusive license agreement for the UCSD p-system and UCSD Pascal with the regents of the University of California where the p-system was developed.

The company is a subsidiary of SofTech, a supplier of software for large systems. SofTech set up the Microsystems Division two years ago in an effort to enter the growing market for microcomputer software.

At COMDEX SofTech Microsystems announced the introduction of the UCSD p-system version IV for the Apple computer. The UCSD p-system can now be used on personal computers and microcomputer development systems based on the 8086/8088, Z80, 8080/8085, 6502, 6809, 9900, PDP-11 and LSI-11 microprocessors.

### Add-ons and turtle graphics

The company also announced a series of add-on products for UCSD-p to be available early next year. They include native-code generators for the 8086/8088, Z80 and 8080, a print spooler, a computer-aided instruction package for UCSD Pascal, a CP/M access facility and turtle graphics.

The addition of turtle graphics to the p-system will allow programmers to develop portable graphics software and use any languages supported by the p-system (including UCSD Pascal, FORTRAN, BASIC and assembly language) to create graphics software, according to Irvine.

The portability of UCSD-p has been recognized by a number of large corporations, according to Irvine, and they have not taken UCSD-p licenses for internal use in order to standardize their own applications software. Corporations like Texas Instruments, Phillips and Boeing are now using the p-system widely.

For the future, Irvine says that the Microsystems Division is doing development work with UCSD-p that will lead to increased portability within local-area networks.

"We need to build networks of small powerful computers that will mirror the organizations that use them," he says. These distributable networks will include many specialized and extremely flexible subsystems including print servers, file servers and mainframe computers.



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# New program generators open doors for novices

By Paul Freiberger, IW Staff

"High thoughts must have high language," reads an ancient Greek maxim. Aristophanes' wisdom prevails, even in a new generation of computer software.

In response to a demand for better applications software packages and a desire to offer nonprogrammers a chance to create their own software, program generators are appearing in an increasing number.

Two new program generators are PEARL Personal Programmer from Relational Systems of Salem, Oregon, and

Autogrammer from Roklan Corporation of Rosemont, Illinois.

Relational Systems (previously known as Computer Pathways) developed one of the first program generators on a micro, PEARL Producing Error-free Automatic Rapid Logic. Like many of these programs, PEARL had been praised by software evaluators; however, like many such generators, it was limited primarily to the creation of file-management programs.

According to Relational president William Stow, the new PEARL, cur-

rently available for the Osborne and Zenith 286 computers, can create a variety of programs.

Autogrammer's creators make a similar claim. In addition, they boast that theirs is the first program generator written in assembly language that produces assembly-language programs.

These products make up a new generation of software because they are so different from the previous three categories of programs.

The first generation of software in the forties was used by hardware tech-

nicians and was written in machine code.

Next came programs that were written in assembly code. With this advance, programmers were less constrained by the particular characteristics of a computer.

Third-generation programs became popular in the sixties. Characterized by the use of high-level language compilers such as FORTRAN, BASIC and COBOL, this generation has eliminated some of the debugging complexities of assembly code by reducing the number of statements in a program.

Nevertheless, software innovators such as those at Relational Systems and Roklan Corporation believe that their products are the harbingers of a new generation. In this new breed, programs will be written in English, possibly by people who are unfamiliar with details of programming as they have been understood in the past.

"The program generator will allow for more personalized packages for the end user," says William Stow. "He won't have to rely on generalized software developed for general purposes."

## Out of a job

According to Stow, one obstacle in advancing program generators is the reluctance of programmers to accept them. But he maintains that programmers' skills will be needed even more in this new generation of software. "Programmers are capable of understanding a problem and creating solutions," he says. "But now too much of their time is spent in coding."

According to Stow, programmers' time would be better spent in advising businesses on the sort of programs they need to create.

Jim Gonzalez of Roklan goes one step further. He says that "people who haven't programmed will be more successful as programmers because they have no preconceived ideas."

He concedes that program generators could ultimately phase some programmers out of a job. "The joke around the office is that we're developing a program to put us out of work."

Autogrammer will soon be available in versions for the three Radio Shack computers and the CP/M operating system.

# 8086 Super-micro

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Manufacture - Model	Class	Operating System	Language (Type*)	Run Time (Seconds)
IBM 3033	Mainframe	VSE-10R/VYL	Stanford BASIC	10
Seattle Computer System 2	Micro	MS-DOS	Microsoft BASIC (C)	33
Digital Equipment PDP 11/70	Mini	n/a	BASIC (I)	45
Prime 550	Mainframe	PRIMOS	BASIC V16.4 (I)	63
Digital Equipment PDP-10	Mainframe	TOPS-10	BASIC (I)	65
IBM System 34	Mainframe	Release 05	BASIC (I)	129
TEI System 48	Micro	MAGIC 1.0	Microsoft BASIC (C)	178
Hewlett-Packard HP3000	Mini	Time Share	BASIC (I)	250
Seattle Computer System 2	Micro	MS-DOS	Microsoft BASIC (I)	310
Alpha Micro AM-100/T	Micro	AMOS 4.3a	Alpha BASIC (SC)	317
Digital Equipment PDP 11/45	Mini	n/a	BASIC (I)	330
Data General NOVA 3	Mini	Time Share	BASIC 5.32	517
Ohio Scientific C4-P	Micro	OS/2 3.2	Level 1 BASIC (I)	680
North Star Floating Point	Micro	NSDOS	NorthStar BASIC (I)	685
Radio Shack TRS-80 II	Micro	TRSDOS 1.2	BASIC (I)	792
Apple II+	Micro	DOS 3.2	Applesoft II (I)	960
Cromemco System 3	Micro	CDOS	32K BASIC (I)	1074
Commodore Pet 2001	Micro	n/a	Microsoft BASIC (I)	1374
IBM 5100	Micro	n/a	BASIC (I)	1951
Vector MZ	Micro	n/a	Micropolis BASIC (I)	2251

\* C = Compiler; I = Interpreter. Times (except for Seattle Computer) taken from August 1981 issue of Interface Age.

Seattle Computer System 2 consists of 8 Mhz. 8086 CPU set, 128K of 70 nsec. static RAM, double-disk controller, 22-slot TEI constant voltage mainframe, a cable for two 8' drives, and MS-DOS operating system (also called 86-DOS, IBM PC-DOS, Lifeboat SB-86). The system is fully assembled and tested and ready to run with the addition of disk drives (we can supply) and terminal. Price: \$4185. 8087 Adapter also available.

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# Victor Business chosen to peddle Peddle's computer

Victor 9000 is new 16-bit desktop micro for CP/M-86 and MSDOS

By Maggie Canon, IW Staff

LAS VEGAS, NV—Victor Business Products introduced a 16-bit desktop computer that runs CP/M-86 and MSDOS, at COMDEX. The Victor 9000 business microcomputer will retail for \$4995.

The Victor 9000 was designed by Chuck Peddle, formerly of Commodore Business Machines. Rumors had been flying that Peddle would announce his new computer at COMDEX, but no one had guessed which company Peddle would choose to

market his new product. According to Peddle, he chose Victor Business Products because of its well-established distribution channels through office equipment stores.

"A significant strength is our distribution network," said Edwin Carlson, president of Victor. "Our organization in the United States consists of 49 branch sales and service offices nationwide and a large dealer network. Our business-computer system will also be marketed by Victor subsidiaries

in Canada, Mexico, Europe, the Middle East, Australia and Latin America."

The standard configuration consists of a CRT, two 5¼-inch floppy-disk drives (1.2 megabytes of disk capacity), a keyboard and 128K of memory.

The RAM memory of the Victor 9000 is expandable to 256K or 512K. The terminal has dual switches, and the screen has a dual format. In the normal mode, it displays 80 x 25 lines. In its expanded format, the character genera-

tor displays 132 columns by 50 lines. The format accommodates the popular financial spreadsheet programs. The high-resolution screen can address an 800 x 400 matrix.

Available software includes WordStar, VictorCalc, Time Manager, accounts payable and receivable, general ledger, payroll and other business-related packages. Pascal, FORTRAN, two COBOL compilers and two BASICs are also available.

According to Peddle, color graphics will be available for the Victor 9000 sometime in 1982. ■

## Context MBA

continued from page 1

will require 192K RAM to run on the IBM Personal Computer and 256K for the Apple II.

The MBA is targeted at middle-level managers and is intended for use as a management tool. According to Brian Fischer, the vice-president and co-founder of Context Management Systems, the new software package includes several sophisticated features. One feature the MBA program includes lets users display up to four windows of information simultaneously. For example, it is possible to show graphics, editing, spreadsheet and data-base-management data on the same screen. Users can also move information between different windows.

All five program modules use the same command, which is similar to the slash commands used in Personal Software's VisiCalc.

Gib Hoxie, president and chairman of Context Management Systems, was previously with IBM and was a partner at Booz-Allen and Hamilton. Brian Fischer, Context's vice-president, is a former Hewlett-Packard and Booz-Allen employee.

The product is scheduled for release in February 1982. ■

## CP/M on a chip

continued from page 1

substantial growth the company expects following its recent infusion of venture-capital funding. Another symptom of the firm's growth is its recent acquisition of Compiler Systems and of MT Microsystems of San Diego, California, the latter arrangement just having been announced at COMDEX.

MT Microsystems supplies the Pascal/MT+ programming language compiler. The firm will become a part of Digital Research's language division under DR's vice-president, Gordon Euhanks, Jr., who sees the compiler as a natural extension of the company's language offerings for professional programmers. The MT version of Pascal was designed for professional applications.

In addition to bringing in new management expertise and new software suppliers, Digital Research has also signed Hamilton-Avnet to distribute its software products. Hamilton-Avnet is one of the world's largest distributors of electronic and computer products. ■

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1McCompuers for Business Applications, 1979

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\*The Apple version requires the Microsoft Z80 software. CSCA has CBRSCICP, CP/M and Microsoft Z80 software in stock.



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# COMDEX Sports International Cast



*Left: COMDEX '81 brought the personal-computer industry to Las Vegas. Manufacturers did a brisk business with dealers and distributors in the massive Las Vegas Convention Center. Right: Roy Bright, managing director of Inlématique, the international arm of the French government's ambitious videotex program, demonstrates a terminal for the electronic directory that will begin replacing the phone book in parts of France next year.*



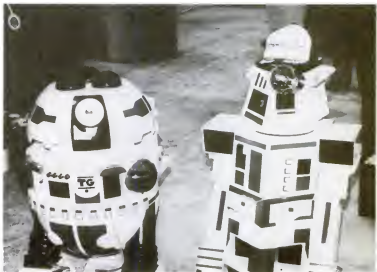
*Below: Novation claims that its Infone 1000 will surpass "Rhonda 500" (standing on the right). Rhonda pointed out that the fellow on the right was "an idiot." Right: Staffers Rosi Hollinbeck and Lynn Matthes sit at InfoWorld's booth at COMDEX '81.*



*Lower right: Almost a dozen robots were at COMDEX, dancing, singing and occasionally terrorizing young children. These cute little creatures acted as greeters at the Sperry-Univac booth. Lower left: Through its marketing arm, Quasar, Matsushita, brought its recently released HCC Link pocket computer, which fits in a briefcase, to COMDEX.*



*Above: Tandberg, a Norwegian corporation, brought an "ergonomic" terminal to COMDEX. Tandberg claimed that when the terminal was introduced for use by the Norwegian Phone Company, employee sick days decreased dramatically.*



# Cottage industry blossoms around IBM micro

By John Markoff, IW Staff

LAS VEGAS, NV—Every microcomputer hobbyist is familiar with the overwhelming range of add-on boards, peripherals, third-party software and publications available for Apple, Radio Shack and S-100 computers.

This year's COMDEX gave ample evidence that a healthy and diverse cottage industry is springing up around the newly released IBM Personal Computer.

The personal computer, which was conspicuously absent from the IBM display booth at COMDEX, made its

presence felt elsewhere on the exhibition floor.

There is little doubt that IBM will have a significant impact on the microcomputer world. One rumor making the rounds was that IBM had already placed an order for 225,000 8088 processor chips for next year—a number that has made an obvious impression on microcomputer software and hardware manufacturers.

To prove its credibility, the IBM Personal Computer has already stimulated the appearance of a new computer magazine, *PC: The Independent Guide*

To IBM Personal Computers, scheduled to offer its premier issue in January of 1982.

Virtually every small software house that *InfoWorld* questioned at COMDEX indicated that they had software for the IBM on the way.

Inside IBM itself, software designers and other employees who have traditionally been tightly restricted from doing outside work, have been given carte blanche to write software for the personal computer.

Microsoft, designers of the MDOS operating system for the IBM, has an-

nounced Multiplan, its own electronic spread sheet, which will appear in an IBM Personal Computer version soon. Microsoft is also likely to release some sort of RAM expander for the IBM.

Probably the most ambitious offering for the IBM Personal Computer to date is from TecMar, a small-component manufacturer located in Cleveland. TecMar came to COMDEX with an entire family of add-on boards ranging from a 256K RAM board to a speech synthesizer, an expansion box and a 5-megabyte Winchester disk and

*continued on following page*

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## Sixteen-bit systems abound at COMDEX in Las Vegas

By Michael Swaine, *IV Staff*

LAS VEGAS, NV—"You seem to be the hit of the show," one visitor to the Fortune booth said to Fortune president Gary Friedman. Friedman shrugged it off nonchalantly, but the crowd around the booth where the new San Carlos, California, firm was showing its 16-bit microcomputer was evidence that the 16-bit machine is being taken very seriously.

Several computers that incorporated 16-bit processors were exhibited at COMDEX, but they were by no means all in direct competition with one another. The computers ranged from board-level products through OEM systems and components, to some smoothly packaged consumer products. The new machines also ranged from personal computers to systems clearly designed to take on

minicomputer competition.

Forward Technology, of Santa Clara, California, showed its line of single-board computers (SBCs), including an 8086 SBC with an optional FORTH monitor, and a 68000 SBC, which also has the FORTH option and comes with up to 256K RAM on the board. Forward Technology also showed an ancillary board for the 68000 SBC, a graphics controller that was driving a display from LucasFilms.

MicroDasy's of Santa Monica, California, exhibited its 68000-based machine with a 6809 processor for I/O and memory management. The firm

was also promoting its seminars on 68000 technology.

Codata and Computhink of Sunnyvale, California, both brought 68000-based systems with some variant of the UNIX operating system. Tricom, with offices in El Monte, California, showed a Z8001-based system, also with a UNIX variant (Microsoft's XENIX).

A less conventional-looking system was demonstrated by Convergent Technologies of Santa Clara, California. Convergent's 8086- and 8088-based computers are packaged separately from the terminals, in a ver-

tical box that also serves as a sort of clipboard.

Wicat of Orem, Utah, and Fortune both brought 68000-based systems; Fortune's is built around UNIX and Wicat's support UNIX as well as its own operating system. Wicat was also offering a graphics terminal that incorporated a Z8000 processor.

Plexus Computers of Santa Clara, California, brought its P/40, a computer designed to run UNIX, and also designed to compete in the minicomputer arena. Typical P/40 units support eight users and cost about \$50,000. ■

*continued from preceding page*  
controller.

"We camped on the doorstep of the Sears business store in Chicago and got the first two machines that were sold," said Carolyn Alpert, a vice-president at TecMar. "We took them home and hooked them up to our logic analyzer and began our design work immediately."

Actually TecMar, which had Industrial and OEM experience designing 8086 systems, began planning as soon as they heard rumors that IBM had chosen the 8088.

David Wertman, vice-president of engineering for TecMar, said IBM had been cooperative with TecMar's development work and had indicated interest.

An IBM observer at COMDEX said essentially the same thing: This time the company is pulling back the curtain a little and actively encouraging outside help. This is a new posture for the computer giant, radically different from its attitude toward plug-compatible manufacturers in the mainframe industry.

### Looks count

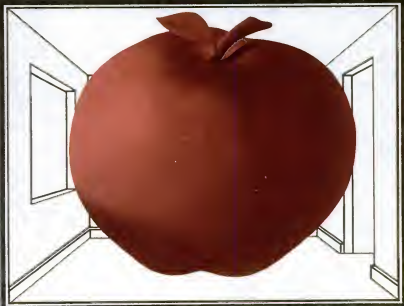
TecMar's 5-megabyte Winchester (and the expansion chassis it sits in) has raised eyebrows here. The entire unit, which is designed to match the IBM processor cabinet in appearance, is priced at \$2995, substantially less than Apple's newly introduced Profile hard-disk system.

"TecMar is right on the money," said Jim Edlin, editor of PC.

Edlin feels that cottage industry will take off around the IBM, but he insists that it will be quite different from the "hobbyist" industry that has grown up to support the Apple. He argues that plug-in boards and software are going to have to be attractively packaged for the new IBM buyer.

"The IBM Personal Computer buyer is someone who has had half a decade of opportunity to buy an Apple. It took the name IBM to pull them in, and the fact that it looked good is important," he said. "Apple and Tandy have awakened a great deal of interest, and, although I know Apple hates to think of it, their advertising has created a lot of sales for IBM." ■

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# Free computer terminals for a million French families

**By John Markoff, IW Staff**  
LAS VEGAS, NV—Advocates of "the electronic information revolution" have so far stumbled over the fact that only a tiny fraction of homes and offices actually have terminals to connect to information sources.

Traditional wisdom has been that some kind of a synergy is needed involving falling hardware costs and useful data bases to make the revolution a reality.

Now the French government is do-

ing something to force the market. Télématique, the French national program to advance electronic information technologies, has announced plans to offer as many as a million French citizens free terminals as part of a massive electronic-telephone-directory experiment that may eventually replace printed directories in all French households.

Videotex observers have known of a plan to install 300,000 terminals in homes in a province in western France

for some time; however, it was announced for the first time at COMDEX that the new French government plans to place orders next year for another 300,000 to 600,000 terminals.

These extra terminals will extend the trial to Paris. A portion of the ordered terminals will be aimed at the professional market and will be treated as an open-ended tool for the businessman.

Users will be able to configure the terminals as personal work stations

with processing and printing capabilities of their own.

The scale of the experiment is staggering. "I guess if you add together all the videotex systems in the world today (Prestel, videotex and quasi-videotex systems like The Source) this one trial will dwarf all of them," says Roy Bright, managing director of Intélmatic, the international marketing arm of France's Télématique program.

Intélmatic had a large booth at COMDEX this year, representing several different French manufacturers, such as Télégue and Matra, and showing off the capabilities of Télétel, the French videotex system.

The booth highlighted the indirect impact that the French experiment may have on the American videotex market. Bright stressed that the huge order the French government is placing for terminals will soon bring the U.S. cost down to the \$300 price range.

The reduced prices, Intélmatic hopes, will create a significant market for integrated electronic data-base systems (which include not just receiving terminals, but equipment for generating data bases and storage systems as well).

Today, the French electronic-directory experiment is still in its earliest stages. Last May 1500 French homes and businesses in the Ile de France region of western France began using electronic directories. By the beginning of 1982 that trial will be expanded by up to 270,000 volunteer households in the same region.

The French are also conducting a simultaneous teletext experiment in Velizy, Versailles and the Vale of the Bièvre, suburbs of Paris, according to Bright. This experiment, known as Télétel 3V, began in March 1981 and is scheduled to last 18 months.

It involves 2500 homes hooked into a nationwide network of computer services. Participants are able to bank, shop, make hotel and holiday reservations and have immediate access to information and news.

Some observers have wondered whether Mitterand's socialist government would maintain an aggressive commitment to the new electronic technologies. Bright says emphatically that it has. "As far as the commitment to the national product, it's just as strong as ever."

"In terms of the sociological implications, they have said that there must be more account taken of society's reaction to this. The consequence of that decision is to say that the 300,000 users in the trial next year should all be volunteers, where before, under the previous government, you were going to be given a terminal whether you wanted one or not."

The first American experiment with French videotex technology is scheduled to begin in December. First Bank System, which is headquartered in Minneapolis and has branches in five states, is installing 285 terminals with selected bank customers for the test. Users will be able to bank, shop and receive news from the Minneapolis Star-Tribune.

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# COMDEX exhibits show new interest in hard disks



Mitsubishi Mini-Flexible Disk Drive

By Michael Swaine, IW Staff

LAS VEGAS, NV—It was clear from the profusion of drives on exhibit at COMDEX that sealed-unit hard-disk drive technology has arrived in the micro-computer marketplace. It was less clear, however, exactly what technique would predominate for backing up these hard disks, but there were some signs.

Winchester disk technology, a level of sophistication beyond the floppy-disk storage common among micro-computer users, has been dropping in price.

The result has been the emergence of a large number of drive manufacturers, many producing 5 1/4-inch drives with 5-megabyte, or greater, capacity, and many avowedly intending to become "the standard" or "the McDonald's" of the industry.

Those manufacturers who intend to survive may have to think in such grandiose terms. Most observers seem to think that the industry cannot support the number of suppliers of Winchester drives now in existence. "There's going to be a shakeout in 1982," Robert Harp, a vice-president at

Vector Graphic of Thousand Oaks, California, stated flatly.

Apple had its Profile 5-megabyte hard-disk drive for the Apple III at COMDEX; there were other consumer-directed drives, as well as a number aimed at OEMs. OEM prices for Winchester drives are now under \$1000.

Another disk demonstrator at COMDEX was Mitsubishi, with the addition of its M4853 5 1/4-inch Mini-Flexible Disk Drive to the Mitsubishi product line.

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December 14, 1981

by Amlyn, of San Jose, California. What they showed at COMDEX was a sort of floppy-disk "jukebox" with a diskette picker that selects the desired one among five floppy disks it can hold at one time.

For some manufacturers, the backup question is moot. Konan Corp., of Phoenix, Arizona, producing add-on Winchester drives for Apple II and other computers, is selling to people who already have a backup device in the form of the existing floppy-disk drives on the system.

But anyone trying to decide on a system containing Winchester storage has to face the backup question. There are floppy disks of different sizes and different recording densities. There is also the cartridge hard-disk option, less expensive than it once was.

Then there is tape storage, once the primary medium of off-line storage for microcomputers, but more sophisticated in its present incarnation. One can get reel-to-reel tape storage for a microcomputer, or cartridge—and there are important distinctions beyond this, such as whether or not to get a streaming-tape drive. And then there is videotape.

Roy Parker, president of Laredo Systems, of Santa Clara, California, predicted that tape storage would turn out to be the most cost-effective backup technique for hard disks in 1982, and that fixed/removable disks would become the most effective storage method the following year.

One company announced a comprehensive fixed/removable package at COMDEX. Data Peripherals, of Sunnyvale, California, has two units, both identical in size and appearance and both fitting into spaces designed for 8-inch floppy-disk drives. One is a 42-megabyte sealed Winchester drive, and the other is a 10-megabyte sealed-cartridge drive. Both units can be driven by the same controller.

Alpha Microsystems, of Irvine, California, and Cromemco, of Mountain View, California, are two companies that have offered reel-to-reel tape drives. These systems are a good deal more expensive than the tape recorder you might have bought with your TRS-80 Model I, of course.

#### Redundancy in recording process

Alpha was exhibiting another tape storage system at COMDEX, however. Alpha now supports videotape recorders. Because of the unreliability of the medium for data-storage purposes, Alpha has built a lot of redundancy into the recording process. It supports directories on tape as well as the capability of booting the system from tape.

Cartridge-tape systems, though, were far more visible at COMDEX than videotape or reel-tape systems. Only recently have the recording density, footage and the number of tracks increased enough to make this backup technique competitive.

Data Electronics of San Diego, California, is one firm producing streaming-tape drives specifically for Winchester backup. Streaming tape means that the data is dumped to tape in a large block, a technique particularly suited to end-of-day backup (and unsuited to most other storage purposes).

#### By Maggie Canon, IW Staff

LAS VEGAS, NV—Hewlett-Packard is pursuing the lucrative personal-computer market with some new and more aggressive strategies. Speaking at the COMDEX trade show here, HP's Dan Terback, announced the formation of a new division for personal computers, which includes the HP series 83 and 85 computers as well as the new HP-125. The new division will be based in Corvallis, Oregon.

## HP hypes its sales hustle

At the same time, Terback revealed that dealer discounts would be increased by 25%.

"Our goal in 1981 was \$100 million in sales; we just finished our fiscal year in excess of that goal," Terback said. The HP-125 broke new ground for HP this year. The personal-computer segment of HP grew by 250% in 1981, and "we expect at least a 50% growth in 1982."

The HP personal computer is aimed at the "analytical profes-

sional in science, engineering and business," according to Terback. HP has been very successful in selling to scientists and engineers, a fact the firm intends to capitalize on. But HP is now attempting to make itself appealing to the business professional also.

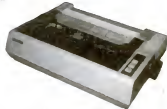
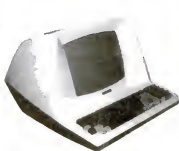
The new dealer program, with its increased discounts, reflects HP's determination to capture a bigger segment of the personal-computer market.

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# Training is missing link in office-computer success

By Dorothy Kunkin Heller

Computer sales to small businesses are generally pitched at the purchaser, not the user. The owner's unilateral acquisition of equipment for his business can cause resistance and resentment from employees and result in failure to utilize the system effectively.

The solution, according to retailers, consultants and software manufacturers dealing with the problem, is training. "Training is the missing link to successfully introducing a computer into the office environment," says Tom Gibbons, president of Software Publishing Company.

"Equipment is really designed by scientists to sell to owners," emphasizes Betty Burr, director of training for the Headquarters Company, a consulting firm.

David Thornburg, Atari consultant and president of Innovision, agrees. "Purchasing a computer for the home is more likely to be a group decision, or at least the focal point of family discussion. The computer's purpose in the office is much simpler—to make money for the owner. The business owner is interested in results, not in the user. The emphasis isn't on human factors except in terms of output."

A typical case history concerns a small construction firm that purchased a business- and word-processing package. The firm's clerical staff went out of its way to work around the system. After six months, only the president (who had bought the computer) and a part-time programmer were using the system.

Finally, the software company that designed the word-processing package sent a programmer out to train the staff. The office workers had been apprehensive about their jobs, nervous about using expensive equipment they didn't understand, reluctant to experiment and frustrated by the amount of time it was taking to get things to work by trial and error. They also wanted attention! After several training sessions, the employees began to fully utilize the system.

Tom Condon, manager of Computer Plus, a retail outlet for Apple Computer products in Sunnyvale, California, analyzes the problem: "When computers are grafted onto organizations instead of being integrated, they are seldom used effectively. Introducing a computer isn't a trivial step. Computers have an enormous impact on the internal workings of an organization."

## Guidelines for success

What guidelines can small businesses generally use to ensure computer success stories? According to Burr, "The training process actually starts long before the purchase of equipment."

- The first step is to evaluate if the business really needs a computer. "You're buying a new tool. Don't go for glamour. Study the applications, functions, volume, input and output you need."
- The next step is to analyze business procedures. "Don't just put

the paper load on-line. Why are you using paper in the first place? Is it habit or is it relevant?"

- Involve the employees who will be affected by the computer in the process of selecting the equipment. "If they help choose it, it's less threatening." Users will ask lots of questions the owner may not think of. "At the Hannover Industrial Fair in West Germany, I've seen office workers actively question and shop for equipment for their employers," says Thornburg.

- Build procedures around the use of the computer. Who will use it, when and why? "Try to avoid making use of the computer as a status symbol."
- When you visit a vendor, go in with a checklist of what you need and a worksheet for evaluating products and services.
- Look for vendor training, support and documentation. "There are a lot of systems that offer similar capabilities. You can afford to choose on the basis of support, including support on a

continuing basis for new hires."

- Look for clear, readable documentation for both hardware and software, but don't confuse reference materials with training. "Good training manuals," according to Bill Carris, national sales training manager for Atari computers, "offer a low ratio of ink to paper, lots of illustrations, show the process step by step and provide lots of backup."

Company presidents may be uncomfortable about consulting their se-

*continued on page 21*

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## More corporations endorse telecommuting for data processors

By Dorothy Kunkin Heller

Telecommunications will enable only 15% to 25% of today's office-based employees to work at home, experts predict. Flex-hour at-home work, supported by the latest microcomputer and communications technology, may be a significant trend for workers in the data-processing industry, however.

"What we're really talking about is returning production to the home, which is where it was before the Industrial Revolution," writes Alvin Toffler, author of *The Third Wave* and *Future Shock*. Toffler coined the

phrase "electronic cottage" for the combined home and work place of the future. Toffler's vision sees "telecommuting" as the solution to social and transportation problems, resulting in stronger communities and a healthier society.

Other students of telecommuting say that Toffler is too optimistic. Dr. Jack M. Nilles, who studies telecommuting and transportation at the University of Southern California, predicts that only 15% of employees will be working at home by 1990.

According to the 1975 census, 3.2% of the work force was employed at

home. One third were farmers; the remainder were in business for themselves.

Recent trends in tele-shopping, electronic banking and pilot projects for remote centers and at-home employment show that American industry is interested in experimenting with the possibilities of telecommuting. Control Data Corporation currently has 60 employees working on terminals at home, mostly programmers. Continental Illinois National Bank & Trust in Chicago recently hired a group of word processors to work at home.

A highly successful British software-support firm, F International, now has a "sister" operation in the United States—Heights Information Technology. Both companies are based on a part-time, at-home work force of data-processing professionals.

Aetna Life & Casualty is studying Heights as a pilot project for Aetna employees working at home. North American Life Insurance Company and Manufacturers Hanover Trust are considering similar programs also.

FMC Corporation in Chicago now has nighttime on-call programmers to solve emergencies on terminals at home. "They can take care of problems in 45 minutes while they're still wearing pajamas," the company says.

A major reason for interest in telecommuting is that it enables people who couldn't work comfortably in the office to join the work force. The largest categories in this group are women with family obligations and handicapped workers.

### Quality of life

Another group of actual or potential telecommuters, according to Leah Tracy of Heights Information Technology, is "people who are more concerned with the quality of their lives than 'getting to the top' in a corporation." This group of men and women, usually middle-class professionals, includes a high proportion of programmers and systems analysts.

Roberta Tasley, a researcher at New York University's Interactive Telecommunications Department, found "a surprising number of at-home workers for whom quality of life, rather than child care, was the prime goal." There were "many more men than I expected to find in this group," says Tasley who is writing a report, "The Changing Shape of Work."

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The "quality-of-life" workers wanted more autonomy, more control over the kind of work they did and more freedom to pursue personal interests. Some of these professionals employed child care for their families, even though they were working at home.

In her preliminary research, Tasley interviewed a presample of mostly programmers and systems analysts about productivity. All of them said that they were "one to three times more productive working at home," and "would never consider returning to an office-based, salaried job."

F International states that its part-time data processors put in "five concentrated hours a day" on the average and "produce a week's work in less time than full-time office workers."

Blue Cross/Blue Shield also found that keypunchers who worked at home on terminals processed forms less expensively than office-based employees.

Tasley and other commentators point out that there are still unresolved issues about working at home. Two problems are promotions and isolation. "Telecommuting is positive in that many women previously had to drop out of the work world entirely during child-rearing years," says Tasley.

**The employer gets as much productivity as from full-time office workers, but doesn't pay a full-time salary.**

"But it's a negative in terms of promotion. Most companies still take the attitude, 'out of sight, out of mind.' If you're not clearly visible at headquarters, you probably won't gain promotion. Men who are telecommuting have the same problem," Tasley adds.

According to Tasley, at-home professionals cite "stress" as a condition of both office life and at-home work. At-home workers must have more self-discipline, be able to structure their working environment and may have conflicts between their at-home work schedule and their families.

#### Isolation from office life

Professional and social isolation can also be a problem. Illinois Trust's at-home clerical employees felt isolated from office life. Workers at remote centers of Southern New England Phone Company felt deprived of visibility and contacts.

According to Judy McCullough of Working Women, an organization in Los Angeles for office workers, "concerns about at-home contract work should be taken as seriously as the advantages." Telecommuting may cause more problems than it solves for office workers.

"Clerical workers don't have decision-making powers about the kind of work they do. Work satisfaction is lower than for professionals because most clerical work is routine, and the pay is also much lower. Clerical workers at home may feel even more isolation and less job satisfaction. Because they're isolated, they may also lack any recourse for solving

problems or mediating grievances."

Women who work at home and can't afford child care or other help may also suffer more stress than in an office. "The home may become a 24-hour work place," McCullough points out. She also notes that part-time work introduces the whole problem of "piecework," where the computer is the supervisor and workers are evaluated solely by "keystroke."

Part-time work definitely benefits the employers, however. "The employer gets the best hours of the employee's day. Usually, he gets as much productivity as from full-time office workers, but doesn't pay a full-time salary or benefits." Clerical at-home

workers for Blue Cross/Blue Shield receive no fringe benefits and pay approximately \$2400 a year for a terminal and paper supplies, for example.

"I'm convinced that at-home work is a universal trend," says McCullough. "It's not for all jobs or for all people."

Tasley suggests that telecommuters should be seen as contractors rather than part-time workers. New policies are needed to make telecommuting really work, she says. These include changes in insurance and benefits, new promotion policies and training managers to deal with a remote work force. "Companies should recognize that at-home contractors are an important resource and work out a bene-

fits structure, equal pay and management and promotion procedures."

"At-home work may be appropriate only for certain kinds of jobs and certain kinds of people. At-home workers must be highly motivated, disciplined and proud of their professional reputation, according to Mrs. Steve Shirley of F International.

"Telecommuting is an important option for people who find it compatible with their work style," says Tasley. "This includes many data-processing professionals. Since the computer industry needs all the talent it can get, working at home makes it possible for more people to join the data-processing work force."

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Jonathan Rotenberg answers queries at a Boston Computer Society exhibit.

## Boston Computer Society

College sophomore heads 3000-member club

By David Needle, *TW Staff*

Until Jonathan Rotenberg, 18, founded the Boston Computer Society four years ago, Boston was the only major city in the United States without any computer-users groups. The first meeting was attended by two people, the second by six. Today the BCS is the largest independent personal-computer association in the country. With over 3000 members, the BCS has shed its early appeal to hard-core microcomputer users and reflects a

greater cross-section of the general public, most of whom are more interested in learning how to use a computer than knowing what's inside it.

"There are other groups as old, or older, than ours, but they're still in the hobbyist phase," says Rotenberg.

The turning point came in 1978 when the BCS put on the Home/Business Computer Show. The 7-hour show had 45 exhibits, seminars and workshops. Over 1000 people attended, and BCS membership jumped from 70 to 225 people. Since that time, membership has continued to grow at a rapid rate.

It's difficult to classify the BCS with any other computer organization or club. It's not strictly a users' group or club or a resource or educational center, yet it has elements of all these categories.

And it's not just a Boston-area phenomenon. Rotenberg thinks that within two years the BCS will be a national organization. That should coincide with Rotenberg's graduation from Brown University in Providence, Rhode Island. (He is currently a sophomore studying anthropology and Western civilization and is taking "no computer courses.")

"I like to think we're becoming the PBS (Public Broadcasting System) of the computer world," Rotenberg says. He feels that computer stores have a vested interest in selling something, even when they're only advising a customer. To counteract retailer commercialism, he sees the BCS as "an independent, objective source of information."

Some of that information appears in the *Boston Computer Update*, the soci-

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by Olaf Lucke

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ety's bimonthly, color, glossy magazine that contains current news, commentary, advice and features on the computer industry. According to Rotenberg, many people from states other than Massachusetts join the society just to receive the *Update*.

#### Saturday hands-on clinics

The BCS offers many other services to local members, however. The BCS Resource Center is open daily, and there are hands-on clinics on different computer applications each Saturday.

The BCS Resource Center has a constant flow of volunteer help for the Saturday clinics.

Systems from all the major manufacturers are available or expected soon, according to Rotenberg.

"There's an interesting kind of learning curve that's developed from the clinics. People don't realize how fast they learn," said Rotenberg. The result is a constant flow of volunteer help for the Saturday clinics from people who, six months earlier, knew nothing about computers.

"The only problem is that some of the people learn quickly and then they want to 'talk shop' [computerese] at the clinics. That can be frustrating for some of the new people. We're trying to eliminate the aura of elitism that surrounds a lot of the industry," explains Rotenberg.

Marjorie Elias, a researcher at Harvard University and a volunteer instructor at the Saturday clinics, is somewhat discouraged that the clinic hasn't attracted more women and often "turns into a men's club." But she adds that the women that do come are a lot more eager to help beginners than the men are.

The BCS was recently granted tax-free status as a nonprofit organization. This rank will enable it to receive grants and expand many of its programs that are intended to serve the public.

A series of "multimedia lunchtime seminars" are being planned, as well as an outreach program intended to bring computers to schools and the community at large.

The society currently represents eight users' groups and five special-interest groups that focus on computer applications. The latter group includes a business users' group, an educational resource exchange, a Pascal users' group, a robotics interest group and a Source/Compuserve users' group.

"We want to expand so that people will have a specific place to go for support," says Rotenberg.

BCS has also sponsored a number of special events, such as October's Personal Computer Forum at the North-east Computer Show, which drew a standing-room-only crowd of over 1000 people.

At that forum, panel participant Nigel Searle of Sinclair Research observed, "The consumer is still asking what a personal computer can do for him." The answer to his question

might best be found at the Boston Computer Society with its resource center, up-to-date library, specific users' and special-interest groups and popular special events designed to help and inform the public at large.

Rotenberg spends a quite moment at a micro in a computer room at BSC headquarters.



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# Software-of-the-month clubs offer good deals, draw in members

By Deborah Wise, IIT Staff

Buying computer software can be bewildering. The choice is enormous, the content often unknown and the price range confusing.

In a way it's like buying a book. Nowadays you can go to software stores, read software review publications and even join software clubs run on the same principle as the Book-of-the-Month Club.

Book clubs entice membership by offering free gifts, and one software club is using the same tactic—and it seems to be working.

If you are a charter member of the

American Software Club (ASC), you receive—with no obligation to make a future purchase—a free checkbook-balancing floppy diskette. Along with this comes the ASC's catalog—which in November listed 24 programs—and a bill for \$1.50 for postage and packing.

The people who returned the application form to join the ASC are under no obligation to buy any further products though they will receive the "Choice-of-the-Month" program automatically. If they decide to keep it, they will be billed. If they don't, they can return it at no cost.

Programs in the ASC's Software

Compendium sell at an average 225 discount below retail list price, according to ASC marketing director Lee Konowe.

ASC's introductory campaign brought in 2000 members in one month. The advertisement appeared in four trade magazines. "Even by my own standards, we have outdone ourselves," said Konowe, a psychologist who started the ASC in Millwood, New York, six months ago with Robin Carter, a former word-processing consultant.

The company plans to expand. Konowe is launching another direct-

mail campaign to 20,000 people as well as continuing to place ads in trade journals. He expects to open international offices in England and Australia soon.

This month the ASC catalog is listing 48 packages for a selection of microcomputers, including Apples, Ataris, CP/M-compatible machines, Commodore PETs and Radio Shack TRS-80s, Konowe said.

The ASC indirectly helps consumers pick products they want by narrowing down their field of choice. "We have expert evaluators and we turn down a considerable amount," observed Konowe. Kids test the entertainment packages; certified public accountants, the business programs; and teachers, the educational offerings, he said.

The company buys the programs in bulk and, therefore, can pass on considerable savings to its members. "I don't think the industry has seen buying at such levels," said Konowe, who guessed ASC would turn over its present \$19,000 worth of inventory in six weeks.

## Other software club

Besides programs, the ASC also offers hardware supplies. Konowe quoted diskettes from the ASC at \$2 that he said retailed for \$4.50.

The ASC Software Compendium catalog will become a legitimate journal within a few months and will contain reviews and feature articles, in addition to an ASC newsletter, Konowe said. As well, many companies have asked for advertising space.

Another similar venture, based in Watertown, Massachusetts, is also doing well. Barry Passen's Microcom Software-of-the-Month Club signed up 300 members in its first two weeks.

Passen offers between 75 and 100 products. After an initial purchase, a member is obligated to buy two additional packages within the next six months. Like Konowe, Passen also has an active staff of evaluators to test the software he offers.

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## Micros bring employment, dignity and hope to the handicapped

By Dorothy Kunkin Heller

Human computer combined with computer technology is enabling handicapped people to find data-processing jobs. Community projects and interested employers are developing programs to train and hire people with handicaps or special medical problems to work either in the office or at home, through "telecommuting."

"Severely handicapped people can be employed in the computer field in almost every capacity," says Richard Canning of the *EDP Analyzer*.

"Handicapped people are not so disadvantaged in such computer-oriented positions as they might be in sales positions or on a factory floor. We have heard of handicapped programmers, systems analysts, data-entry operators and data-center managers. The severely handicapped are one of the most overlooked sources of data-processing employees."

Wells Fargo Bank, with 373 offices throughout the state of California, began hiring handicapped employees when members of its personnel department urged managers to consider handicapped applicants.

The bank has four severely handicapped employees in system development and 31 in data operations, with disabilities that include total blindness, mental retardation, deafness, visual impairments, aphasia, autism, orthopedic impairments, learning disabilities, emotional problems and cerebral palsy.

"We didn't have to create any special physical accommodations, other than obeying federal guidelines about wheelchair access," says John Crooks of the Wells Fargo operations department. "We did put in a teletype system that makes it possible for deaf employees to make and receive phone calls."

Wells Fargo also offers classes for employees in American sign language. To date, over 100 employees have taken the course.

### At-home work for handicapped

Wells Fargo is not considering telecommuting as a serious option however. "All our handicapped employees work full-time on-site and are committed to working and living fully in society despite their handicaps," says Crooks.

"One of our programming specialists is a quadriplegic with speech difficulties. He not only works on-site full-time, but conducts classes and commutes on assignment to Los Angeles driving his own van."

Other organizations are exploring at-home work for handicapped programmers. Lift Inc., a nonprofit organization in Northbrook, Illinois, has trained about 30 programmers who work on terminals at home for companies such as Standard Oil Company of Indiana, the First National Bank of Chicago and Montgomery Ward. Some of the severely handicapped programmers operate the keyboard with sticks strapped to their hands.

A man who was partially paralyzed in a swimming accident has developed a mobile unit to give handicapped people computer experience in their own homes. Working with the

National Paraplegia Foundation and equipment loaned by Texas Instruments, Jack Kishpaugh created the Mobile Computer Skills Evaluation Unit. Handicapped individuals can use the unit to evaluate their interest, skills and capabilities and can take a 16-hour course to begin training as an operator, word processor or programmer at home.

Hardware modifications for the mobile unit were designed by a quadriplegic who supervised other disabled workers who could use their hands. Additional modifications include putting all written material into loose-

leaf binders to facilitate easy page turning with mouth sticks or orthopedic devices.

The BASIC software games and self-teaching programs used in the Mobile Unit are loaned by the National Paraplegia Foundation (NPF). The NPF notes that it has "sold" the idea to several Texan employers. "The employer saves on office space, parking and other employee facilities. The employee saves on the time and difficulties that may be involved in transporting himself to the work site," says Kishpaugh.

Kishpaugh began development of

the Mobile Unit for a contest sponsored by Johns Hopkins University and Tandy Corporation for personal-computer applications that aided people with handicaps. "With community resources and federal funding becoming more scarce, it is very important that we encourage and enable people to be as self-sufficient as possible," says Kishpaugh. "This applies particularly to the handicapped person who has abilities that have been overlooked. These abilities can be put to use through computers located in their homes, enabling them to be gainfully employed."

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# Micro data-base-management systems

By Scott Mace, IW Staff

As data-base-management software for micros grows in power and complexity, more and more of that software has earned the right to be called a data base—even if it only simulates a true data base.

Some products, such as PFS Report by Software Publishing Corporation, do not even bill themselves as data-base managers, even though PFS and other, more elaborate, programs share the same method of storing and accessing information.

This method, the source of the sim-

ulation, is ISAM—the indexed sequential access method. ISAM stores records in sequential order but builds a separate index to guide retrieval. ISAM isn't as fast as the true random access that a data-base-management system running on a mainframe computer provides, but since micros do not have the RAM storage capability of mainframe computers, some compromise must be made.

At the recent Mini/Micro computer show in Anaheim, California, software consultant David Ferris declared that microcomputer data-base managers

were "utterly inadequate for serious data-processing software development." Ferris said most data-base-management systems for micros were "little more than elementary ISAM file organizations, with no real understanding of such major issues for the software professional as reliability and multiuser concurrent access."

Of the products available for micros, only Micro Data Base Associates's MDBS is acceptable for professional work, Ferris continued.

According to Frank Colin, however, "It all depends upon your point of

view." Colin is a technical support representative for Stoneware, a California company that produces DB Master, a data-base-management system for the Apple computer.

Colin described DB Master as "about as true a data-base manager as you can get for a micro."

"You can only fit so much on a 5¼-inch disk," admitted Stoneware's general manager, Lou Long.

With the addition of software that will run with a hard-disk drive, DB Master will become a multiuser system, Colin said.

While many micro owners have gradually moved from simple file-

**Micro data-base managers can perform any task that their mainframe counterparts can perform—given enough time.**

management systems to data bases, some users of large timesharing systems have acquired micros and micro data-base-management software for different reasons. One company that supplies both kinds of data-base-management products is Comshare, of Ann Arbor, Michigan.

Comshare's customers opt for a large or small solution, based on how big that data base they have to maintain is, according to Ron Jeffries, president of information systems at Comshare.

Roughly, those whose data bases fill 20,000 to 40,000 cells (each cell represents the intersection of a row and a column on a spreadsheet) can purchase micro data-base managers from Comshare, such as MPI's Quest. On the other hand, those whose data bases are likely to fill from 40,000 to more than a million cells can use the fully relational data-base service called Questor that Comshare offers.

Jeffries feels there are two basic reasons why micro data bases are limited. First, software developers of micro data-base managers "are not particularly sophisticated yet," according to Jeffries. "Most don't have 10 to 15 years' experience in the industry (unlike mainframe programmers), but are people right out of school or programming hackers."

The second drawback is the size of microcomputers themselves. Both speed and storage capacity are more limited, Jeffries said, so certain features that could run on a micro are left out in order to improve speed and storage ability.

Many observers agree, however, that micro data-base managers can perform any task that their mainframe counterparts can perform—given enough time.

Colin said printing and sorting were the slowest operations micro-data-base managers perform. Access time on a micro can typically be 3½ seconds, as opposed to half a second on a mainframe. "If a guy wants instant re-



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sponse, he's going to spend more money for the data base," Colin said.

#### Waiting for data

Another time-consuming aspect of micro data-base managers is multiple entry of information. On a mainframe, when transactions take place during the day, the data-base program can automatically update various records. Micro data bases are not large enough to perform such automatic updating, though.

One of the reasons micros have appeared in place of, or in addition to, mainframes is the shorter waiting time for use of the computer. Colin cited the example of an oil company executive who was tired of calling his company's data-processing department, requesting a data-base-generated re-

port and receiving a stack of printouts hours later that might or might not have contained the information he wanted.

"We tend to get spoiled by data bases that do everything," Colin commented. Still, there are times when a microcomputer is more convenient, as well as less expensive.

"The main idea is to make the computer usable," Colin concluded.

The group vice-president of Comshare, Kevin Kalkhoven, said that micro data-base-management systems were "about six months behind" the development of financial-planning programs such as Target, produced by AMSI, a subsidiary of Comshare.

Kalkhoven added that the advent of 256K random-access memory would open up micros to many more database applications.

Comshare's acquisition of AMSI was partly a reaction to the competition micro data bases could pose for large timesharing companies, Kalkhoven explained.

"Our competitors still seem afraid of micros, as well they should be," Kalkhoven said.

In his speech in Anaheim, David Ferris predicted that the micro world would soon suffer from some of the same problems that mainframe-database developers are familiar with, namely long development times and

high costs. "Most of the micros destined for the business environment will end up spending a lot of time on traditional applications such as order entry, inventory maintenance, accounts receivable and so on... The facts are that as people attempt to build an integrated portfolio of programs around a central data base, life suddenly gets much, much harder, and this applies in exactly the same way whether you have a \$4 million IBM 3081 mainframe or a \$1000 TRS-80."

Some micro software developers agree with this conclusion, but the development of micro data-base-management systems will continue. ■

## The Source as a data base

#### By Scott Mace, IIV Staff

Although The Source is not in itself a data base, users of this microcomputer information service can access various data bases sandwiched in between the other services provided The Source.

There are about 50 separate data bases within The Source, according to its manager of corporate communications, Mike Rawl. The data bases range from simple bibliographies to wine lists, cooking recipes and several different ways to access commodity prices.

"Virtually any area of interest can be programmed into the system," Rawl said. "The term data base is too limiting. We call ourselves an information utility."

Whatever it is called, The Source provides information in certain areas in much the same way that a relational data base does, by keyword searches. The Source can also produce an entire book (many bestsellers are on-line) from such a keyword search. The Source can also search several different data bases at once.

The growth of The Source's data bases has come from two directions: Home users have gradually discovered business applications, and business users have logged into home-information services.

News services such as the New York Times maintain many of the business data bases. Rawl said The Source had to create its data bases from ones that already existed as hard copy. "We can only deal with people whose data bases are in existence," Rawl said. "We have no gateway between the computer and someone's box of file cards."

Nonetheless, users of The Source have set up other data bases themselves. These data bases cover a plethora of subjects and are often quite sophisticated. Certain data bases are restricted by password codes, so that organizations can restrict data-base access to their own members.

Some of the information data bases that will soon be added to The Source are a legislative monitoring service, a commodity news service and a digest of 27 leading business publications. ■

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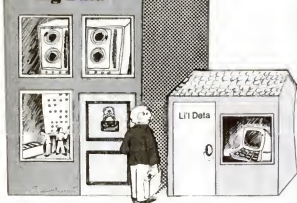
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## Big Data



## Share or own: data-base options

By Paul Freiburger, IW Staff

If we are indeed at the advent of a new "information age," the means we choose to store and retrieve information will significantly shape our future. Two options in the area of data-base management are timesharing network systems and owning one's own micro or minicomputer system. Each method has intrinsic advantages and disadvantages.

Timesharing is the older of the two methods. It utilizes large computers that store information at a central location for use by subscribers. Software available from these networks can vary

from general data-base systems to custom software developed to suit a client's specifications.

Leasing a computer system to manage data can be a useful introduction to computerizing an office. "I realize it's probably more expensive in the long run," says Bill Welch, controller of Luce & Company, a meat wholesaler in San Francisco. Welch's firm recently opted for a timesharing system that offers customized software for such services as payroll, general ledger and accounts receivable.

Despite the cost, Welch explains, costs for timesharing are spread out over time like any rental agreement. "We're a small firm and we can't keep a data-processing department on hand," he says. "With this service, we have the advantage of having them do some programming for us."

But there are problems with timesharing. Communications are accomplished over a phone line, which slows down the data-transfer rate. Users of timesharing systems may become excessively dependent on suppliers for any program modifications.

On the other hand, the option of owning your own system has become more viable with the emergence of the microprocessor. There are a variety of data-base-management software packages available for many different microcomputers. Until very recently, however, many of these have been limited in the features they offer.

A true data-base system allows users to keep track of complex kinds of relationships that may exist between information while, at the same time, avoiding duplication of data.

Many software packages that are labeled data-base managers are, in fact, generalized file-management systems. They permit you to create a file with records of a certain kind, but they cannot track the complex interrelationships in the data.

Progress has been made in microcomputer software, though. For example, dBASEII, a CP/M-based data-management program is a relational data base that also allows users to customize the program. Within the program is a programming language that allows users to program their own data base. Other microcomputer programs with similar sophistication will likely emerge in the near future, particularly as hard disks become more readily available.

## A giant step—backwards

Large, maintained data bases such as Dow Jones or the New York Times will remain as network systems. It makes little sense for a home or business to try to duplicate the work of these large organizations.

The personal computer may soon combine with timesharing systems to help speed up the access time to a large system. Using a personal computer as a "dumb" terminal to access information from a larger computer, without taking advantage of the smaller CPU as well, is in some ways a giant step backwards.

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# Data bases: tools for the information revolution

By John Markoff, IW Staff

One of the unanswered questions of the "information revolution" is: how is the human mind going to be able to digest all of the facts that will deluge everyone in an information society?

Overnight, paralleling the development of the microprocessor, information has become a tangible commodity that can transform itself into many forms: counselor, tool, teacher, policeman, weapon.

This situation has created new pressures for instruments that manage and manipulate information. Now, large corporations and institutions routinely use complex data-base-management systems that can structure and track huge volumes of data, often making it instantaneously available to users spread out in different locations. The systemization of information gives only a glimpse of the true power of these instruments, however.

It is apparent that these systems have powers that extend far beyond being merely electronic filing cabinets. In the Robert Redford and Faye Dunaway movie *Three Days Of The Condor*, a computer operator deep within the bowels of the CIA uses a sophisticated data-base-management system to explore the labyrinthine electronic files of the agency and to track down the location of an assassin. (The system is evidently not infallible: at one point in the search, it links two suspects because their hat sizes match.)

We hope that this is still the stuff that science fiction is made of, but it illustrates the point. As the processing power and available memory of personal computers increase, and as large data bases become accessible over communications networks, the potential of data-base-management systems will be available not just to giant corporations but to ordinary mortals as well. What are some of the possibilities?

It has become common knowledge that the market for the personal computer is being driven largely by applications software. People routinely come into computer stores and say something like "I want to buy something to run VisiCalc on."

Right now, buyers are shopping for individual applications packages, word processors, electronic spread sheets and accounting packages. In the future, though, they are increasingly likely to want tools for tying disparate applications together, thus magnifying their power.

## Data-base systems for micros

Today, few truly relational data-base managers are available to microcomputer users. Most are file managers that limit records to the single file that constitutes the data base. This kind of system allows users to keep their information well organized, but it actually does little else.

On larger systems—or, in some cases, on micros at a high cost—relational data-base managers do not explicitly define data relationships. Instead, a powerful data-manipulation language helps create temporary re-

cords (referred to as "tuples") allowing users to recombine their data in many ways.

When truly relational data bases are able to fit on personal computers, a whole range of innovative applications will emerge. One clear possibility is to combine data-base-management software with editing tools for writers and programmers. A writer who should easily combine notes and outlines with the body of his text would have a perfect writing tool. Combining these capabilities with multiple-screen-display capabilities would rev-

olutionize the art of writing.

Data-base software may also be one of the keys to increasing programmer productivity and reducing the cost of software.

## A community data base

Possibly more exciting are innovative uses for data-base-management systems like the one the Community Memory Project of Berkeley, California, is planning. Community Memory, a small group of programmers, engineers, journalists and grass-roots political organizers, has designed a fully

relational data base, which it is selling through its marketing arm, Pacific Software.

Named Sequitur, this data base is designed as the foundation of an interactive, decentralized communications network. It will be the heart of a public-access information system that Community Memory intends to demonstrate in the San Francisco Bay Area. Such a system would incorporate terminals placed in public locations that anyone could use to take advantage of the potential of the information revolution.

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ROW 1 (Net Sales) (--) MODE=NORMAL ORDER=R/O ROW=1-50 COL=1-20

ENTER COMMAND:

ROW	First Quarter	Second Quarter	Third Quarter	Fourth Quarter	Total	MATHS
1 Net Sales	1,000.0	1,100.0	1,210.0	1,331.0	4,641.0	40 ADD
2 Cost of Good	450.0	489.5	532.4	575.0	2,050.9	41 SUBTRACT
3 Gen & Adm	200.0	220.0	242.0	266.2	928.2	42 MULTIPLY
4 S&S & Develo	300.0	350.0	400.0	450.0	1,500.0	43 DIVIDE
5 Total Costs	950.0	1,059.5	1,174.4	1,291.2	4,475.1	44 NEGATE
6 Gross Profit	50.0	40.5	35.6	35.8	161.9	45 INVERSE
7 Profit	5.0	3.7	2.9	2.7	3.5	46 INTEGER
8	0.0	0.0	0.0	0.0	0.0	47 ROUND
9	0.0	0.0	0.0	0.0	0.0	48 ABSOLUTE
10 % C.O.G.S.	45.0	44.5	44.0	45.5	0.0	49 SUM K
11	0.0	0.0	0.0	0.0	0.0	50 DIV K
12	0.0	0.0	0.0	0.0	0.0	51 SUM
13	0.0	0.0	0.0	0.0	0.0	52 GET
14	0.0	0.0	0.0	0.0	0.0	53 ZERO
15	0.0	0.0	0.0	0.0	0.0	54
16	0.0	0.0	0.0	0.0	0.0	55
17	0.0	0.0	0.0	0.0	0.0	56

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# InfoViews

## Editorial

### Pros & cons of mail ordering

The role of mail-order sales in the microcomputer arena has changed during the first decade of the industry. At first, mail ordering was the only way to purchase a micro, but the growth of computer retail outlets, office-product centers and other distributors has vastly overtaken the pivotal role that mail order once held.

Recently Apple Computer demanded that its dealers "not engage in mail-order sales of Apple products." Apple said the action will help the company "shoulder the responsibility for supporting and educating consumers in the use and application of personal computers."

We applaud those sentiments. Certainly all manufacturers and dealers should feel that same responsibility to their customers. And in most cases the computer retailer, working with the manufacturers, can provide service more quickly and more reliably than a mail-order house.

The inexperienced buyer can benefit from seeing and trying out a system in a computer store, even if only for a few brief minutes. If nothing else, the first-time buyer can be reassured to see a system up and running and to see that other people are coming in to buy. The consumer can also take confidence in knowing he has a place to return to if something goes wrong with the system later.

It is unfortunate that hard feelings between some stores and mail-order dealers exist. Many retailers have told us stories about people who come into their stores and demand a better deal on a system because they saw it priced for less in a mail-order advertisement. Under such circumstances, we can appreciate a retailer's bitter feelings.

On the other hand, we think mail order can be a valuable option for consumers, and computer purchase through mail ordering should not be abandoned. Buying from a computer store isn't the best choice for everyone. For example, it's a lot more practical for some people to shop by mail rather than commute to the nearest retailer, who might be many miles away. Even with department stores getting into the act, how many in-store computer sections are there in cities with less than 100,000 people?

Experienced buyers stand to save a lot of money purchasing through mail. As one mail-order dealer pointed out, you can save as much as \$1000 on a \$5000 to \$8000 system bought mail order rather than from a computer store. (He can offer lower prices because his overhead is less than a retailer's.)

Does the computer store provide \$1000 worth of service and support? Hopefully not, if it's selling reliable systems.

In most cases the mail-order buyer has a manufacturer's warranty to fall back on if he can afford to wait for the service and/or replacement parts. Furthermore, most reputable mail-order dealers often provide adequate phone support.

Mail order isn't for everyone, but many people feel it offers a broader range of products and knowledge than they can find in most computer stores. And some people feel threatened by sales pressure that is often present in stores. They would rather talk on the phone—even pay a consultant—and ultimately buy through the mail instead of venturing into a high-powered retail environment.

Mail order should be available for the buyer who knows what he wants. Computer stores are valid shopping territories for inexperienced beginning microcomputerists, but mail order should remain a consumer option as long as reliable products exist.—DN, DW

## Letters to the Editor

### Mystery addressed

I need your assistance to help me unravel the greatest mystery since the truth about the Masonic Rites.

What is the mailing address for The Source?

I have just spent the last two days going back through two years' worth of six different magazines and as many *InfoWorlds* as I have on hand to try and find it. It is absolutely amazing just how much I have found out about them, just about everything except how to write them.

As you have recently run some stories about them, I am hoping that their address may be on your files somewhere.

I am delighted that you are a weekly, as *InfoWorld* is one helluva good finger on the pulse that keeps me informed as it happens. The only negative aspect is the impact on my checkbook, but that's my problem.

Brian D. Strong  
Wellington, New Zealand

You may write to The Source, c/o Source Telecomputing Corporation, 1616 Anderson Road, McLean, VA 22102.

### VDTs good for you?

Your October 26, 1981, special-section story, "VDTs Can Cause Stress and Other Health Hazards in the Office," cannot seem to decide whether video-display terminals do or do not pose a radiation threat to users. We maintain that there is no evidence that such a threat exists.

In recent testimony before Rep. Al-bert Gore's House Subcommittee on Investigations and Oversight, we cited substantial evidence that there is less threat from VDT radiation than from radiation levels always present in the natural environment.

In the most severe fault tests that IBM could artificially impose, a typical unit emitted only 3 milliwatts of radiation per hour. This compares to a U.S. standard of 500 milliwatts per hour, which is accepted as a safe level. Independent studies by the Food and Drug Administration and the National Institute of Occupational Safety and Health have verified the safety of the VDT from a radiation standpoint. Moreover, studies by the Environmental Protection Agency and the Armed Forces Radiobiology Research Institute essentially concur with industry and government findings.

Even spokesmen for the American Newspaper Guild conceded during House hearings that there was no evidence of radiation harm from VDTs. The Guild persists, however, saying, "Damn the facts. Let's look and look until we find evidence of a hazard, and if we don't find it, then let's look some more."

Stories like yours, though well intentioned, merely give fuel to those who, for a variety of reasons, scoff at the



brumide. If it ain't broke, don't fix it.

For instance, you correctly cite some of the potential (though largely theoretical and unsubstantiated) stress problems associated with VDT use. Then your reporters proceed to delve into the radiation issue, first presenting it as a suspicion and allegation, but later accepting it as a fact, i.e., "Radiation is not the only threat the VDT poses."

The Computer and Business Equipment Manufacturers Association (CBEMA) has spent much time and money in an effort to explore the allegations that VDTs pose a radiation health hazard. So have many of our member companies.

It is in our interest as an industry to prove once and for all—to ourselves and to the public—that VDTs are safe. We believe that to be the case will be more than happy to share our findings with the editors of *InfoWorld*.

Jeffrey T. Wood  
Director of Communications  
CBEMA  
Washington, DC

### Company pursues software info

I have just subscribed to *InfoWorld* and received my first copy. My responsibilities as a financial controller and now DP manager don't leave much time for reading, but I scanned the November 2 issue and found four ads or announcements in "InfoNews/Software" which were of serious interest to me. Letters to those vendors are going out today. That's more activity than any two issues of *Byte* or *Interface Age* have generated here.

Thought you'd like to know.

Adrian S. Wheeler, Controller  
Technoserve  
Norwalk, CT

### Good enough for 'average' Americans

I would like to comment on your review of my book in the November 9 issue. While *The Computers Are Coming* is, as you say, a "gee whiz" book, and as I say, not meant for anyone in computing, it does hit its mark with Mr. or Mrs. Average American, its intended audience.

Every reviewer is entitled to his or her opinion, but it would have been prudent for you to keep in mind exactly who the book is written for and how that type of person reacts to the printed word. Perhaps the book shouldn't have been reviewed in *InfoWorld* if it could not have been seen in this light.

The average American off the street responds to the language, simplicity and style of this writing, I know. It's my fourth book. My first sold over 250,000 copies. So while I may not be [sic] the most literate when it comes to writing about computers, the audience I write for loves it. And that's not hype—in three weeks I've sold over 400 copies of this book from one mailing to stores. No big publisher, just one man trying to further the acceptance of computing in this country.

One suggestion for future reviews: make sure you know who the book is intended for and why it was written that way. Then you can either choose to review it or not. But please don't take a book which people not in your sphere of education or computer involvement will like and treat it the way you did.

If you can fault something I've written, fine. But opinions are just that, and while half the people might agree with you and not buy this book, there are the other half that might get something useful out of it. And when you think about it, we're all trying to do the same thing: raise computer consciousness in this country. Let's not fight each other!

Irv Brechner  
Irv Brechner Enterprises  
Livingston, NJ

## Decries Microsoft manual sale policy

I have recently tried to buy a copy of the users' manual for Microsoft's FORTRAN and been amazed to discover that dealers are unable to sell Microsoft's manuals unless I buy the actual software.

This has to be one of the most idiotic and anticonsumerist policies that we have seen in the micro industry for a long time (and that's saying something). As somebody who advises software consumers, I always suggest that purchasers should evaluate software as far as they can before they actually buy it. The biggest software rip-off is probably that there are vast quantities of software that people have legitimately bought lying around unused.

One of the essential evaluation steps is usually to buy a copy of the manual beforehand to see that the software is likely to be suitable. With Microsoft's policy, this is impossible, and I should have to advise clients that they should direct their trade to suppliers who allow them to make some kind of evaluation beforehand.

In my own particular case, I have been given a particular FORTRAN program from a university in Cologne (Germany), and want to adapt it for use

on my CP/M system. I do not need a FORTRAN compiler myself and would translate the program into BASIC rather than buy a FORTRAN compiler. However, a friend has offered to compile the program for me on his system and let me have the compiled results to run on mine. I need a manual in order to make adaptations to the source code so that it will compile properly.

This seems to me a perfectly legitimate thing to want to do.

The obvious result of this restrictive and monopolistic practice is that people are going to photocopy manuals and feel righteously justified in breaching Microsoft's copyright. Consumers develop a sense of grievance, which can only encourage them to rip off software and documentation.

Ian Litterick  
London, England

## Amateur scientists use micros too

I have enjoyed *InfoWorld* for a year and a half, and I appreciated your November 9, 1981, issue on Microcomputers in Science. However, I was disappointed that you did not offer more articles in support of your thesis of growth in applications. In particular, you omitted an interest of mine. There was only one sentence, about a developing generation of scientists, that suggested the increasing importance of the amateur scientist, now that inexpensive computer instrumentation and calculation is available.

For example, a coworker of mine (who has since moved to Arizona) reported in *Sky and Telescope* (January 1981), on his microcomputer-controlled observatory with which he measures and analyzes variable stars. Not only is his micro implementation fascinating, but he has the capability of making serious contributions to the body of astronomical knowledge.

Thanks for your excellent newspaper. Of the dozen computer publications that are regularly pushed through my mail slot, yours is the only one I sit down to read immediately.

Bill Herbert  
Greenbelt, MD

## VisiFile creation

In the November 2, 1981, issue of your publication, you printed an item regarding Personal Software and its acquisition of software products.

In the article you stated that VisiFile was "created by in-house software developers."

In fact, VisiFile was written as was its predecessor, The CCA Data Management System by my company, Creative Computer Applications.

With the exception of a distribution agreement, CCA is not affiliated in any way with PSI.

Helmar B. Herman, President  
Creative Computer Applications  
Nashua, NH

## Viewpoint

### Don't forget the common man

By John Markoff, IW Staff

Online '81, held in Dallas last month, was a tour de force for the youthful, electronic-information industry.

The range of powerful data bases on display at the conference was truly stunning. From the technical wizardry of Chemical Abstracts's ability to search through the molecular structures of million of compounds, to the sheer power of Mead Data's NEXIS, which includes the text of the entire Encyclopedia Britannica on line, electronic-information resources have begun to live up to the promise of the so-called information revolution.

Yet, the way in which the on-line industry has succeeded is cause for concern. "Knowledge for whom?" was once a question asked of scientists and scholars by activists during the '60s. They were concerned that knowledge workers were exclusively serving the powers-that-be. It's now fair to ask the same question of the burgeoning information utilities.

In the words of one speaker at a user's group meeting at the Online '81 conference, "As electronic-information systems have matured, they have been transformed from public systems with free access to private systems offering expensive information."

In practice this means that today electronic information is the province of large corporations and institutions. Many of the "information specialists" who attended Online '81 are employed by Fortune 500 corporations.

Isn't this inevitable? Certainly the cost of laboriously building data bases, writing sophisticated software, maintaining large mainframes to allow many users to simultaneously access information, and even creating a new class of on-line information workers who refer to themselves as "searchers," is bound to raise the cost of information.

Those who don't have the backing of a large corporate budget are often shocked to learn that accessing a particular data base may easily cost \$100 an hour or more. True—as defenders of the high cost of electronic information will tell you—a given information search may only take a fraction of an hour, meaning that the actual cost of information is lower than it first appears. The inescapable fact is that information has become a commodity with a vengeance, however.

This may appear to be an ideal state of affairs to supporters of a free-market economy; however, there is no denying that information is an odd commodity that doesn't fit comfortably into traditional molds. What other commodities can be given to two parties and still allow each to equally retain the full value of the original?

A more ominous problem is the impending centralization and control of information by large corporations as a consequence of the advent of new information technology. In the past, the public library has been one of society's most treasured institutions. It is a truly democratic setting that has provided access to knowledge, virtually as a basic right, for everyone. Today, information is increasingly stored in the form of magnetic impressions within the bowels of a computer. The overworked cliché that "knowledge is power" takes on a new meaning in light of the quantum increase of available information and the degree to which the world is rapidly being divided into "information haves" and "information have-nots."

What will happen if information is controlled by a small technology? The power of electronic information lies both in the speed with which it can be obtained and in the ease with which specific information can be located or patterns of information discerned. It is easy to speculate on how such powers might be abused by government agencies; but the underlying question is: Will information technologies create vast new chasms between different groups in society?

The answer to the question "Knowledge for whom?" is obvious. Provisions must be made to make certain that the public library retains its vitality in the coming era of electronic information. Whether this is done by subsidizing access to data bases or by fundamentally rethinking the cost of information, the trend toward an information elite must be reversed.

It is worthwhile to remember that neither information nor knowledge is a substitute for wisdom.



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Options that work with any of the above: Business Analyst<sup>TM</sup>, which speeds the handling of more complex procedures, \$395; Peach PIE<sup>TM</sup>, which lets you draw from and add to information in the Peachtree General Ledger package, \$179; and Interchange<sup>TM</sup>, which lets you merge small procedures into larger ones and split large procedures into smaller ones, \$139.

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# InfoViews

According to Garetz/Mark Garetz

## Ads, Osbornes and chip wars

I was thumbing through a recent computer magazine reading the advertisement recently. (That's about all I read in them these days—*InfoWorld* is just about the only computer periodical in which I find the articles more interesting than the ads.)

I came across an ad for a mail-order computer outfit that had just about every computer on the market listed. There was one curious entry—The Osborne 1 (sic). I don't know if this was an

unintentional typo on the advertiser's part or whether it was intended as some kind of editorial comment on the machine.

It seems that I get at least one query a day about how the Osborne is doing. I really don't know, and I'm hearing conflicting reports from the dealers. One dealer has supposedly sold over 200 units and is very happy with the machine's performance. He claims an insignificant DOA (dead-on-arrival)

rate and extremely good customer acceptance of the Osborne 1.

On the other hand, another dealer supposedly took delivery of 16 units, of which 8 were DOA and most of the remaining 8 had problems reading disks. He also claimed that customers were unhappy with the Osborne's performance—they expected more.

I heard reports of a third dealer who wouldn't even open the shipping container and inspect the unit to see how well it worked unless the customer paid him an additional \$25. At first that upset me; then I realized that new-car dealers do the same thing (the ubiquitous dealer-prep charge). In both cases

the margins for the dealer are small.

And once and for all I'm tired of hearing that the small screen didn't hurt IBM's or HP's machine sales. IBM and HP only tried to display 32 characters on a line compared to the Osborne's 54.

### Back to the ads

We were on the subject of magazine ads a while ago. I think I am going to scream if I see one more ad that lists the price of an item as SCALL. That really irritates me. I also dislike the phrase, "Price too low to advertise!" Says who? When did you ever see Sears pull that one in an ad? I would think that if you truly had lower prices, you wouldn't be afraid to print them.

Back to SCALL. I have a good mind to send these dealers an order for a complete computer system with a check enclosed for the amount of SCALL. Then they could SCALL me to find out how much the check is worth. Does SCALL bug you too? If it does, SCALL

Now just let someone pick a mini versus micro fight with me over beer again!

these dealers SCOLL to find out their price.

I have heard a rumor (it may be announced officially by the time this appears) that Epson is about ready to release its own computer system. Word is that it's Z80-based with 64K of RAM, integral CRT and keyboard, two double-sided double-density minifloppies and CP/M operating system. The price tag is rumored to be in the \$2000 range. Adam Osborne may get some real competition yet.

Epson certainly has a track record of being able to provide a quality unit at an extremely low price. I'm thinking of the MX-80 printer, which is truly a remarkable piece of machinery. I have not heard any complaints from anyone about the MX-80, except that it is a little on the slow side.

Another product that I have heard no complaints about, and have heard nothing but high praise for, is the dBase II software from Ashton-Tate. This product is a sophisticated and fast relational database-management system that is finding lots of uses in small businesses everywhere.

Ashton-Tate's free demo offer is also a winner. You get two diskettes; one is sealed and contains the actual dBASE II program, and the other is the demonstration diskette. The demo diskette contains a fully functional clone of the program, but it allows only a limited number of records. It lets you play with the program, and if you don't like it, you can return the unopened diskette for a full refund. I'll bet they haven't gotten many of them back.

Speaking of "no complaints" software, ISA has released version 2.0 of its popular Spellguard package. It boasts a 1.5-times increase in throughput (how could it get any faster?) and at the same time offers the same 20,000-word dictionary but compressed into a third the space of the

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PFS, the personal filing system, lets you design your own form on the screen for organizing information. Once it's created you just fill in the blanks. Looking up what you've filed is just as easy. PFS can search for a number, a single piece of data, a word within a page of text, or any combination. All forms that match are displayed on the screen for browsing, updating, expanding, or printing. PFS can even create mailing labels.

PFS: REPORT, the personal report system, uses the files PFS creates to produce a report tailored to your

specifications. Just mark the information you want listed and PFS: REPORT will sort it and let you specify headings, totals, averages, counts, and calculations. You can save your report design for use on a regular basis.

PFS and PFS: REPORT come with simple self-teaching manuals plus a support plan that includes program updates and factory experts ready to answer your questions. And all of this at an affordable price. Each program is priced below \$100.00.

The PFS software series is different. It is not a specialized application package nor a complex programmer-oriented database manager. It's a personal information management system that lets you store, retrieve, and report information your way without programming. The PFS software series is available

through your local dealers. If they don't carry it have them give us a call at (415) 962-8911 or write to us at Software Publishing Corporation, 2021 Landings Drive, MtnView, CA 94043.



\*requires a 48K, 16-sector disk based APPLE II system



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(800) 227-2400 x1000 adv #109, CA only (800) 772-2666 x1000 adv #108

original.

Digital Research has released MP/M 2.0 and MP/M-86 multitier operating systems. MP/M 2.0 reportedly cleans up many of the problems in the earlier MP/M, which should cause wide acceptance. MP/M-86 has even more features and enhancements. Digital Research released its XLT-86 8080-to-8086 source-code converter program. It reportedly does a sophisticated flow analysis of the program being converted, which should make for faster code.

One interesting thing is that two versions of the program were announced: one runs under CP/M-80, and the other runs on a VAX. (For those of you who don't know, a VAX is a very fast, very expensive multitier minicomputer made by DEC.) The interesting thing is the price differential. The CP/M version costs a mere \$150, but the VAX version is \$8000!

You could buy a complete 8088/86-based S-100 development system with a nice terminal and disks for well under \$8000! I'll let the facts stand for themselves, but remember this when someone argues minis versus micros.

#### Mini vs. micro fights

Speaking of minis versus micros, DEC has announced its entry into the personal-computer fray. The firm now offers a Z80-based add-on for the VT-100 terminal, and the ad for the new micro clearly claims that CP/M is the established leader in new software development. Notice that this ad does not differentiate between mini and micro software.

Boy, I wish I'd had this as ammunition a few years ago when the biggest argument in favor of minis was the wealth of software out there. Well, now the largest maker of minicomputers is essentially admitting defeat. Now just let someone pick a mini versus micro fight with me over beer again!

The 8086 and 8088 are winning more and more design-ins every day. Plus, there is a lot of software support for these chips. And the IAPX 286 looks like a winner for the future.

The 68000 remains the dream machine on paper; but I have heard many

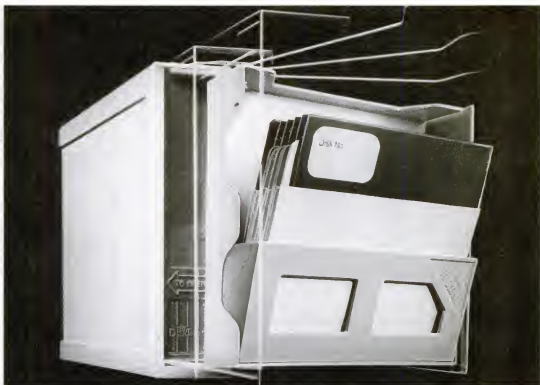
reports that its performance when given real-world tasks is underwhelming. A friend made some benchmark comparisons of the 68000 versus the 8086 in a multitier environment and found that the 8086 did just as well, if not better, than the 68000. I was surprised, given all the glowing comments I've heard about the 68K.

Another story I heard involved a medical-instrument company that actually built the same instrument with an 8086, a 68000 and a Z8000. The 8086 won hands down, which surprised the company. The firm fully expected

the 68000 to win. Not only that, but the 8086 machine was running months before the other two. (The Z8000 placed a sorry third, by the way.)

Here's one last little tidbit, and then I'm off to COMDEX. According to Tim Williams, the author of the Oasis operating system, preliminary benchmarks show Oasis-16 running on a 5-MHz 8088 to be more than two times faster than the 8-bit Oasis running on a 6-MHz Z80.

That's it for this month, watch for my report on COMDEX in next month's column. See you then. ■



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# InfoWorld Software Review

## AutoScribe II from Zenith Data Systems

By Bill Dewey

Word-processing packages combine the functions of text editors and formatters. Zenith Data Systems' AutoScribe II for the Heath/Zenith H89/Z89 microcomputer has been designed with this goal in mind.

### Features

Two menus let you perform all the major functions of AutoScribe II. The starting menu lets you enter the cre-

ate, revise and view-document modes. The disk procedures menu lets you delete or copy documents, display or print the index and modify the default-spacing and page-length format parameters.

You can use any of the text-editing functions when creating, revising or viewing documents. Most of the editing functions are standard; however, several deserve special mention.

The program gives you four search

options, several ways to delete and the ability to copy other documents in the system into the document you're working on. The search modes allow you to search for a string, search and replace a single occurrence of a string and search and automatically (or optionally) replace all occurrences of a string.

A quick-search function automatically looks for text enclosed in square brackets, [ ], marks the text for deletion

and then enters the insert mode to let you insert new text. You can use the block-copy and block-move facilities to place standard text into defined areas.

The various 'delete' options let you delete single characters, words, lines and text to the end of the page. Each pending deletion is highlighted in reverse video until you execute the command.

AutoScribe II's formatting controls

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### InfoWorld Software Report Card AutoScribe II, Version 5.0

	Poor	Fair	Good	Excellent
Performance	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Documentation	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ease of Use	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Error Handling	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

### System Requirements

- Heath/Zenith H89/Z89 computer
- Modified HDOS 1.6 (supplied with program)
- 48K RAM
- One 5 1/4-inch drive

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let you specify horizontal and vertical spacing and left and right margins. You can also call for left or right justification or centering of text anywhere in a document. You preset default settings for these format controls using the Disk Procedures menu, but you can override them anywhere in the text.

The program provides automatic page numbering and gives you the option to place the numbers at any column and on any line. (The line containing the page number must, however, be outside the range defined in the default settings.)

The package does not do automatic page headings, though. You can simulate page headings, or footings, by using the Block Copy option. You can define any area of text as a block. Then you can insert the block anywhere in the text with a single keystroke, G for get. The original text will be left as is.

The Block Move command is different in that it moves the text out of the old and into the new location.

A training diskette comes with the system. Used with the written documentation, the training diskette takes the first-time user step by step through the standard functions of



## AutoScribe II.

Zenith Data Systems provides two copies of the master AutoScribe II diskette and one blank diskette for your first working disk. You can use one copy for system generation and keep the other as a permanent backup.

## Performance

Given its billing as a word processor, AutoScribe performs well. The consequences of Zenith Data Systems's decision to use a modified version of HDOS 1.6 quickly become apparent when you're using the system. One benefit of that decision is that, by tailoring the operating system to the application, the program's authors handle functions such as SYSGEN and INIT in a simple, step-by-step manner. Users with no knowledge of HDOS can easily configure and generate the AutoScribe II system.

But using HDOS 1.6 also causes two kinds of problems: physical disk limitations and the inability to use the functions of HDOS to manipulate text generated by AutoScribe II.

With HDOS 2.0 you can access disk drives with extra capacity. You can effectively increase storage twofold by using 40-track double-sided drives, fourfold with 80-track double-sided drives and eightfold with the new double-density controller boards that are now available. By using a modified HDOS 1.6, AutoScribe II curtails your ability to take advantage of this additional storage.

The second problem with using the modified HDOS is that you can't pre- or post-process your text files. One addition to word-processing systems that is extremely useful is the ability to perform spelling checks on your documents after they have been created. Since only AutoScribe II can access your files easily, this is an extremely difficult task for another program to perform.

Also, there is no way to transfer data from system to system except by physical transfer on diskette.

## Ease of use

AutoScribe II is a fairly easy system to use. You can command most functions with a single keystroke that has some meaning to the user (such as *D* for delete).

You use the cursor-control keys to move the cursor in the command mode, but those keys are also available for use as numbers in the insert-text mode. This is especially helpful when you're entering statistical data.

The master diskettes provided by Zenith Data Systems lead you step by step through the configuration and system-generation process. No knowledge of HDOS is needed to build and operate AutoScribe II other than knowing how to turn on and boot the system.

The revision process under AutoScribe II is unduly cumbersome. Any change to a document, no matter how insignificant, requires that you create a new document name, number and file. The program retains all versions of this document until you explicitly delete them. If you're not careful, a few revisions of a large document can easily fill a disk.

With this package, you can't make corrections by striking over mistakes. You must enter the insert mode to add the needed text, and then go into the delete mode to remove the text that is not wanted. An alternate method would be to use the search-and-replace mode, but this is cumbersome when you need to change large amounts of text.

When you do search and replace, the search string is overwritten by the replacement-string entry. If, by any chance, you are interrupted during the process of entering the search-and-replace strings, it is easy to forget what search string you entered.

The search string should be dis-

played during this operation, and there is room on the screen for it. If you do discover a problem before you execute the search-and-replace string, an EXC will cancel the operation.

## Error handling

AutoScribe II seems to be secure from user errors. The only error messages I was able to generate were "Illegal Document Number" in response to an incorrect entry and a warning that the disk was filling up.

In the case of the illegal document number, the program displayed no indication as to how to continue. I was forced to search the manual to find that an ESC command returns you to

the main menu and that a press of the return key repeats the input request.

## Documentation

The AutoScribe II manual, in conjunction with the training diskette, provides documentation that is quite good. The manual explains all options, modes and errors in a concise and easily understandable format. The only exception to this is the section on printing a document.

A quick-reference guide is provided for handy referral. Unfortunately, this reference card does not contain the functions that have been added since the last upgrade of the program—

*continued on page 45*

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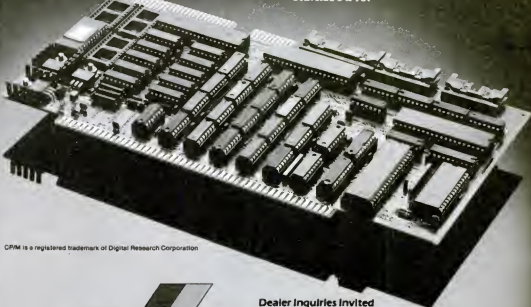
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# InfoWorld Software Review

## Castle Wolfenstein for Apple II from Muse Software

By Scott Mace, IW Staff

This game is not for the squeamish. Castle Wolfenstein, written by Silas Warner and distributed by Muse Software, is a nightmarish symphony of clicking jackboots, German shouts, gunshots, pools of blood and exploding grenades. It's also nightmarishly good fun.

### Features

One objective of the game is to escape from a Nazi-held medieval castle.

You are an Allied soldier captured during World War II, and a dying cellmate has just handed you a stolen Mauser pistol with ten bullets. Ahead of you lies a dizzying maze of rooms, each filled with Nazi guards and SS storm troopers. Getting out alive turns out to be quite a trick.

Your other task is to find Nazi war plans hidden, as all items are in plain-looking lockers throughout the castle. The lockers can only be opened through a time-consuming process.

I should point out here that this is not just another adventure game. Many details—the soldiers, walls, chests, guns and you—are portrayed graphically. Other information, such as the contents of lockers, error messages and your supply inventory, is described in a single line of text at the bottom of the screen.

Movement of your armed soldier is controlled either by keyboard, paddle or joystick. In addition to moving your soldier in eight different ways, you can

aim his gun in eight directions. You don't see bullets fly, but you can tell when they hit their target—the enemy soldier lets out a cry and collapses into a stagnant pool of remains.

Along the way, you must shoot many such guards in order to reach other rooms or treasure, so bring a strong stomach or a good, warped sense of humor.

Only one room at a time is visible. Since you are looking down into the room's floor plan, you can see in all di-

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## InfoWorld Software Report Card

### Castle Wolfenstein

	Poor	Fair	Good	Excellent
Performance	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Documentation	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Ease of Use	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Error Handling	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

### System Requirements

- Apple II
- DOS 3.2 or 3.3 with Applesoft II
- ROM
- 48K RAM
- One disk drive

Price: \$29.95

Muse Software  
330 North Charles Street  
Baltimore, MD 21201

rections, and you are able to move or point your gun vertically, horizontally or diagonally.

When you move from one room to the next, the screen is momentarily blank while the next room is loaded into the Apple from the disk. Eventually you reach a room with a stairway that leads to another floor with various rooms.

After a seemingly infinite number of rooms, a passage leads you outside, where the message "You've escaped!" appears, and the previously black background turns into a blue sky. Then Castle Wolfenstein may promote you in rank (starting with private) and raise the game's difficulty level.

Along the way, you encounter lockers with various contents that can either help you, hinder you or have no effect. You also encounter doors that must be unlocked or broken in order for you to pass and SS storm troopers who wear bulletproof vests and must be blown up with a grenade. If you don't blow them up, they might hound you from room to room until they capture you.

One other thing—when you get tired of one castle, you can generate

many more different castles.

### Performance

I found Castle Wolfenstein generally fast enough and challenging enough to capture my lasting attention. Especially at the higher levels, where SS guards multiply and guards seem to leap at you, the game calls for lightning-swift reflexes. I can't say if it becomes easier with a paddle or joystick, but with a keyboard, learning how to pivot the gun and fire before being captured is a trick. Ask the others around *InfoWorld* who tried to escape and failed.

The playing time of the game is lengthened by the long introduction (90 seconds) needed to load the disk. During that time you read the same introductory speech, and after playing 20 times, you are sick of it. The other time-eater, that I feel is unnecessary, is the long period needed to open lockers, during which time a message at the bottom of the screen announces, "It will open in [230] seconds" for instance. These long delays are the one real flaw in the program; they may have been intended to heighten suspense, but instead they take away from the game's excitement. You could take up needlepoint and finish a substantial book while playing a game and waiting for games to start and lockers to open.

I wonder how entertaining this game is for children. I found the graphic violence and my own tendency to unnecessarily shoot guards rather loathsome.

### Ease of use

The program boots easily, and options to generate new games or castles are presented clearly at the start of a game. Ironically, the escape key on the Apple merely saves your position for resumed play later.

The enclosed documentation provides a quick reference guide to all keys used during your escape attempts.

Any time you push the return key, your current inventory of supplies is displayed, telling you if you've reached your maximum supply of bullets or grenades, and whether or not you must search and kill again.

### Error handling

The easiest error you can make is to walk into something (a wall, for instance). The screen goes kablooey for a second and your gun, if brandished, disappears until you summon it again. If you try to open a door and have no key or the inappropriate key, you are admonished of your miscalculation at the bottom of the screen. (The keys are not marked, so if you don't work, the only solution is to steal some off another guard.) Try to use the contents of a closed locker and Castle Wolfenstein tells you the locker is still shut.

Occasionally, when I pushed the space bar accidentally and I was nowhere near a captured guard or treasure chest, I received spurious messages telling me I had supplies before me, when, in fact, the screen was blank in that area. This problem was not frequent and did not detract from the game.

I played Castle Wolfenstein on both

the Apple II and the Apple III (using the Apple II emulation mode disk) and found subtle differences between the two machines. For example, continuously holding down the space bar of the Apple III causes lockers to open twice as fast, but the same action on the II doesn't work. Instead you must release and press the space bar repeatedly to achieve the same effect. Both of these actions, I imagine, are unforeseen—if welcome—bugs.

While I'm talking about little playing advantages—and there are many you will discover—halfway through the review, someone disconnected the Apple III's sound, and for some reason, I found it easier to slip through rooms

undetected. But it isn't as much fun to play the game without the sound effects.

A total power failure in the midst of a game will cause you to lose that game, but your rank will not be diminished. Your rank, however, can drop if you lose enough games—or manage to blow yourself up.

### Documentation

The eight-page booklet with Castle Wolfenstein tells enough, but not too much, to get you started. A reproduction of the keyboard with arrows pointing to game control keys is handy. Especially enjoyable were the translations of German phrases heard

during the game.

A map of the particular castle you are working on is not provided, of course, and you may want to keep one handy in case you need more supplies. Once you generate a new castle, however, you must generate a new map as well.

### Summary

Castle Wolfenstein fills the bill as an action-packed thriller that ranks with some of the other popular Apple games. Since no arcade version of the game exists, Mass appears to have come up with a unique treasure for Apple game enthusiasts. If you live to tell about it!

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# InfoWorld Software Review

## DISSAX, a disassembler program from CEXEC, Inc.

By John Ford

A disassembler is precisely the opposite of an assembler. It is a program that interprets machine language and converts it to assembly language wherever possible. For those who are familiar with CP/M and its standard complement of utilities, the L command in DDT is a simple example of a disassembler.

DISSAX is a disassembler from CEXEC that requires a minimal 16K CP/M operating environment.

### Features

DISSAX disassembles 8080 or Z80 executable object files (.COM files). The two main options are:

- Option A generates a source code file (.ASM) in which all identifiable subroutine calls, jump locations and data references have assigned labels. This feature is most important because it conveniently lets you relocate code for which the original

source file is unavailable.

- Option R provides cross referencing for all labels. These references are printed as comments in the body of the source code rather than at the end of the listing as is more commonly found.

DISSAX has five other options of lesser importance. The output source file produced by DISSAX contains standard Zilog Mostek Z80 mnemonics.

### Performance

DISSAX generally does its job well. Most purchasers will find the A option (which produces a reference label) to be useful and convenient. DISSAX is written in Z80 code, thus excluding CP/M users with 8080 systems.

Option P generates an output print file, similar to a PRN (commented output) file from CP/M's assembler. DISSAX's version is enormous by comparison, however. For example, a

## FMS-80 Organizes Your Organization

FMS-80, a data base management system, offers the user a quick and easy way to organize and efficiently manipulate data so sound decisions can be made on facts displayed.

FMS-80\*\*\* is the most powerful stand-alone DBM program available to the micro computer industry.

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- Menus (that applications programs can be selected from)
- Instantaneous data query on indexed records
- Mathematical manipulation of numeric data fields using the report generator or the programming language EFM (Extended File Maintenance)
- Easy to use video "how to" training tapes are available
- Manipulation of up to 19 different data files (using EFM) at one time and displaying this information on the screen, screen

rating reports, generating other data files or on-line updating of input files that already exist

- FMS-80 is able to call other programs like subroutines in EFM
- FMS-80 is able to read data files that other programs have generated
- No restrictions to record size other than available RAM memory space
- Operates under CP/M, MP/M, or CDOS\*\*

FMS-80 allows the flexibility to quickly create programs that allow data to be entered in a form that a secretary recognizes and generates reports that the manager requires.

If you're continuously asked to do applications programs and don't have time to do it in BASIC, consider FMS-80. For additional information contact

Systems Plus,  
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Palo Alto, CA  
94303, Phone  
415/969/7047

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## InfoWorld

Software Report Card

### DISSAX

	Poor	Fair	Good	Excellent
Performance	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Documentation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Ease of Use	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Error Handling	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

### System Requirements

- CP/M
- 16K RAM
- Eight-inch single-density disk drive

Price: \$100

CEXEC, Inc.,  
8301 Greenboro Drive, Suite 900  
McLean, VA 22102

1K COM file may produce a 26K file of disassembled code. The reason for this anomaly is that DISSAX does not generate TAB characters for multiple spaces. This inefficient technique makes the P option less useful.

DISSAX has a limited ability to differentiate between code and data. You can override this feature if you desire. In my own test case I found that DISSAX frequently interpreted code as data.

### Ease of use and error handling

DISSAX is easy to use. A single CP/M command line starts the program, and there's no interactive facility built in.

I was unable to crash my system by mishandling any of the listed commands. Improper command syntax typically results in a warning message and a controlled program abort back to CP/M.

### Documentation

Considering the nature of the software, the documentation is adequate, as it is written for the programmer with some CP/M experience. There is even a brief intro to the 14-

continued on page 43

# InfoWorld Software Review

## MDBS, a data-base-management system for micros

By Tim Barry

Microcomputer data-base managers are all the rage now. Everybody is discovering that data and software are the most valuable parts of their systems. With data comes the need to organize, and with organization comes the data base.

MDBS (Micro Data Base System) is a data-base management system that can help make the job easier.

MDBS is a collection of data-base organization routines. It is not a stand-alone data base. You can use the MDBS data-description language (DDL) routine to define the data base. Then the applications programs (written in higher-level languages) access the data through programs in the MDBS data-management system (DMS).

In addition to the standard packages, DDL and DMS, several MDBS options are available. (They were included with the review copy.)

You use the data-restructuring system (DRS) to reformat a data base for changes to the basic schema. Since it is often difficult to foresee all future applications, and since the alternative to restructuring is both complex and time consuming, DRS is probably a mandatory option for serious users.

The record transaction logger (RTL) is a backup utility that automatically posts all transactions with the data base. This posting function lets you automatically keep an up-to-date backup copy of the data base. Again, the RTL utility is probably a mandatory option for most users.

The Query Report System (QRS) is a report-generator program that lets you define reports that access data in the data base. You can specify a variety of search-and-match criteria using the QRS program even if you're not familiar with the actual structure of the data base. QRS is a useful option but not really necessary for developing your own applications.

The price of MDBS depends upon which packages you select. The basic system of DDL and DMS is \$900; DRS, RTL and QRS are \$300 each. A bundled set of all packages and documentation is \$1500.

This is not cheap software, but it is targeted at a very specific marketplace: application programmers who are building data bases for custom and semicustom applications. MDBS is certainly not a software package for the mass market.

### Performance

The MDBS system can run with several microprocessor, disk-operating-system and host-language combinations. The program is available for Z80, 8080/8085 and 6502 processors. Operating systems the package can run on include: CP/M, Oasis, TRSDOS, North Star DOS and Apple DOS. The host languages include Microsoft FORTRAN, BASIC or COBOL, PL-1/80, Pascal/M and others. The review copy included all packages for CP/M, Z80 and PL-1/80.

The basic procedure for using the

MDBS is straightforward. You define the schema for the entire data base using the data-description language. Then you write the actual application program in the host language, using calls to the data-management system to handle the actual transactions between the program and the data base. The object of the game is to use the MDBS system as a common set of reliable routines to lower the development time required to implement commonly used data-base functions.

The operational specifications of the system are impressive. The number of record types per data base (254) and item types per record type (255) is large enough that the only practical limitations are disk space and memory. Records can be of variable length; each item type, for example, can be up to 9,999 characters long. You can spread files over several disks to increase file capacity. Also, a wide variety of access modes lets you modify, search or delete data records in the

data base.

For programmers, the system supports a full CODASYL-oriented data structure. It has multiple levels of access protection (good for building unified record systems where users only have access to a subset of the data base). The program also supports one-to-one, one-to-many, many-to-one, and many-to-many set types.

The MDBS programs performed without a hitch. I built a small pro-

*continued on following page*



The MX-100. Not just better. Bigger.

# Epson.

Our MX-80 was a pretty tough act to follow. I mean, how do you top the best-selling printer in the world?

Frankly, it wasn't easy. But the results of all our sleepless nights will knock your socks off.

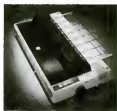
The MX-100 is a printer that must be seen to be believed. For starters, we built in unmatched correspondence quality printing, and an ultra-high resolution bit image graphics capability. Then we added the ability to print up to 233 columns of information on 15" wide paper to give you the most incredible spread sheets you're ever likely to see. Finally, we topped it all off with both a satin-smooth friction feed platen and fully adjustable, removable tractors. And the list of standard features goes on and on and on.

Needless to say, the specs on this machine — and especially at under \$1000 — are practically unbelievable. But there's something about the MX-100 that goes far

beyond just the specs; something about the way it all comes together, the attention to detail, the fit, the feel. Mere words fail us. But when you see an MX-100, you'll know what we mean.

All in all, the MX-100 is the most remarkable printer we've ever built. Which creates rather a large problem for those of us at Epson.

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continued from preceding page gram to help me cross-index a part of my magazine article collection. I designed a schema, built a data definition and implemented the whole thing using PL/1-80. My total elapsed time was under 12 hours; I estimate a complete original development would have taken 40 hours or more—and it would not have been as complete.

Of course, practice with the system would make you even more efficient in using its features. This kind of leverage lets you concentrate on the application instead of the redundant operations, and thus increases both the quality and productivity of your work.

One area to watch carefully is the

size of the data buffers allocated to the application program. If the buffer size is too small the record-access time will become excessive. The bigger the data base becomes, the more buffer space you need; this may become a juggling act as the program, variables, operating system and DMS all compete for their share of the RAM. 65K is really not adequate to fully exploit the capabilities of this software. An 8086 version of the system is available, and that should solve the memory problem.

#### Documentation

MDBS comes supplied with extensive documentation. The review pack-

age included eight separate documents including a lot of overview material and user manuals for each of the main programs. The documents also included a brief technical description of how to install the version on my specific computer. The manuals are all in 8½x11-inch format; some are printed, others are copied on two sides. None of the manuals are indexed—a significant shortcoming when this amount of information is involved.

The user documentation is very good. The overview information gives a good introduction to the possible applications of data-base systems. The user's manual contains all the infor-

mation you need to implement your systems. Remember, however, that this is not a package for novice users. A person who is not well versed in data-base terminology and techniques will not find the documentation an adequate tutorial on the use of data structures in programming applications.

#### Ease of use

I have some good news and some bad news. The good news is that MDBS can significantly lower the overall development time required to build a wide variety of data-base applications. The bad news is that covering the application front as thoroughly as this package does makes it formidable

## InfoWorld Software Report Card

### MDBS Version 1.04.D

	Poor	Fair	Good	Excellent
Performance	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Documentation	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Ease of Use	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Error Handling	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

#### System Requirements

- Various computer systems (See review)
- CP/M, others (See review)
- 48K RAM
- One disk drive

Price: \$900 - \$1500 (See review)

Micro Data Base Systems, Inc.  
P.O. Box 248  
Lafayette, IN 47902

for novices to use. Despite this, I rated ease of use "good."

Program installation on the development system requires a fairly complex step-by-step procedure. Some patching in machine language may be required, and this material is not well explained in the documentation. You must also select buffer sizes to balance use of memory between system requirements, application-program requirements and available memory. This is a particularly critical area, because it significantly affects the running speed of the final program. Programs of medium or larger complexity will probably require you to structure the application with overlays. None of this is particularly difficult for experienced programmers; beginners will not find it a good time, however.

The data-description language provides reasonable facilities for creating and modifying the schema definitions. The syntax requirements are strict; definitions must appear in specific fields on the lines of the data description. This is not convenient, but it can be done fairly effectively using the editing commands.

#### CRT CONTROLLER



The intelligent CRT Controller uses an 8085A CPU and 8075 integrated CRT Controller. It features:

- 25 lines (80 char./line)
- 57 dot matrix
- Upper & lower case
- Two 2716's controller & TTL generator
- Serial Interface RS232 & CTR
- Baud rates 0110, 150, 300, 600, 1200, 2400, 4800 and 9600
- Keyboard scanning system
- Unencoded keyboard required
- Uses +5V & ±12V Power Supplies
- Does not have graphic capabilities

Documentation includes program listing and composite video circuit.

Base Board only (with doc)

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#### A-D CONVERTER



JBE's 16-channel A/D Converter originates to your Apple II computer. It uses an ADC087 which incorporates a 16-channel multiplexer and an 8 bit A/D converter. The 16 inputs are high impedance and the voltage range is 0 to 5V. 12bits Conversion time is "10µsec". The resolution is 1 bit or 256 steps. Linearity is a 1/2 step in 50 pin DIP sockets are used for input and a reference voltage connections. There are 3 input TTL signals (includes sample program)

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#### 6522 APPLE II INTERFACE



The JBE 6522 Parallel Interface for the Apple II Computer, plugs directly into any slot 1 through 7 in the Apple II. This card has 2 6522 chips that provide:

- Four 8 bit bi-directional I/O ports
- Four 16 bit programmable timer/counters
- Serial shift registers
- Handshaking
- A 74LS05 is for timing. Four 16 pin sockets provide easy connections to other peripheral devices. Dip jumpers with ribbon cables are also available from JBE. The 6522 Parallel I/O card interfaces to the JBE-5000 and JBE-5001.

Understanding of machine language required to use this board. Inputs and outputs are TTL compatible.

79-205A \$49.95 Assembled

79-205B \$49.95 Kit

79-205C \$49.95 Bare Board

79-205D \$49.95 Bare Board

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#### 81-200 "SLIM"



Single board large scale Integration Microcomputer. This 4.5 x 8.5 board uses the 6502 Microprocessor, two 6522 V.I.A., two 2114 RAM's, 2516, 2716 or 2532 EPROM. The fully buffered 2264 pin bus is similar to the KIM+, SYM+, and AIM+ expansion connector. The four 8 bit I/O ports connect through 16 pin dip sockets. This board was designed for control and is ideal for Personal and OEM use.

• 6502 MPU

• Two 6522 V.I.A.'s

• Four 2114 RAM's (2K bytes)

• Two 2516 or 2532

• Crystal clock 1 Mhz

• Requires 5V 1 AMP Power

• 4 to 5 card card

• Power on reset

• Fully buffered-expandable

• Solder mask both sides

Use your Apple II Computer, JBE 6522 Parallel Interface card and EPROM Programmer as a development system for SLIM.

81-260A \$199.95 Assembled

81-260B \$149.95 Kit

81-260C \$39.95 Bare Board

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#### JBE I MICROCOMPUTER



JBE's 7.75 x 11.75 6502 base socketed board has 16K capacity for 16K of EPROM, 4K of RAM, 6 Parallel Ports and Serial Port. Monitor and Tiny Basic are also available. The fully populated version includes:

• 1 6502 CPU

• 4 6522 V.I.A. (8 Parallel I/O Ports)

• 1 AY-1013 (Serial I/O)

• 6 2114 RAM (4K)

• 2 2716 EPROM (Monitor & Tiny Basic)

The partially populated version includes:

• 1 6502 CPU

• 1 AY-1013 (Serial I/O Port)

• 2 2114 RAM (1K)

• 1 2716 EPROM (with Monitor)

Both versions include sockets for 2716's or 2532's 16 pin sockets for I/O interfacing and a DB25 connector for RS232.

All address and data lines are brought off the board to the 50 pin edge connector. (similar to the Apple II bus)

This board also features power on reset and cassette interface.

81-030 C Fully Populated \$349.95

81-030M Partially Populated \$249.95

81-030B Bare Board \$89.95

81-030C Fully Populated \$349.95

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#### PARTS

6502 MPU \$9.95

5522 V.I.A. \$9.95

Overall, the package is about as easy to use as is reasonable to expect for a package that provides such sophisticated capabilities. Because you must write your application in one of the host languages using the facilities provided by the MDBS package, probably 90% of microcomputer users would be unqualified to use the system. For the serious professional programmer, however, wrestling with the initial complexity is more than offset by the opportunity to lower the amount of work it takes to generate custom applications programs.

#### Error handling

Because it is an accessory software package that is used in conjunction with a user-written application program, MDBS is really only partially responsible for error recovery. The real burden of handling errors rests with the application program itself and with the host language.

Because of the lack of a totally controlled run-time environment, MDBS reacts badly to errors caused by the application program. Failing to close a file or any other type of damage, logical or physical, can crash the entire data base. This is not really a fault of MDBS; it is a warning to users to debug programs carefully and update the backup files on a regular basis. I recommend using the record-transaction logger program to keep the system backed up automatically.

The one area over which the system does have complete control is the portion of the data-description language that analyzes your data-base description. This part of the DDL program does a good job of error analysis and presentation. The user manual has a full section on these errors and their causes. The messages and explanations are well done and make for effi-

cient debugging.

The various routines in the run-time package all have abnormal-termination codes which they return to the application program for further processing. These codes are all explained in the sections of the manual that deal with the actual calls to the run-time portions of the data-management system. The explanations are good and should allow applications programmers to build solid error-procedure procedures into their programs.

#### Support

I had no insoluble problems with the package and thus I had no direct

contact with Micro Data Base Systems. The manual and the user agreement do not specify a term of warranty or say how long the new users are covered by program updates. They both say that updates will be available for "a nominal handling fee," but the fee is not specified.

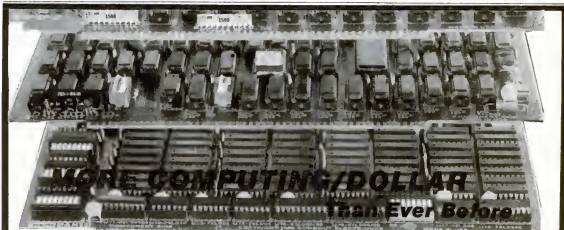
I have no problem with the firm charging for new features and for out-of-warranty updates, but I feel that new users should have some period during which bug fixes are free. In some cases, programs with numerous bugs have been released far ahead of time, and then the users have been continually on the hook to buy updates of a program that should have

worked in the first place.

#### Summary

MDBS is a powerful collection of data-organization utilities that can be a tremendous aid to application programmers developing custom database programs. It's not suitable for beginners, but it offers experienced programmers the ability to lower overall development time by reducing to a minimum the amount of time spent configuring utilities common to all data-base developments.

MDBS is a tool that people who build a lot of data-intensive applications should consider adding to their libraries.



**PRICE \$1095.00 SAVING: \$429.00**

SOURCE: PRIORITY 1 ELECTRONICS Manufacturer: COMUPRO From GODOBT (Of Course)

CPU-Z

**HIGH PERFORMANCE  
FLOPPY DISK CONTROLLER**

RAM 20 10 MB

32K STATIC RAM

The CPU Z is used in all workstations that only includes all standard 280A features, but also has the necessary options to ensure backward compatibility with most older S-100 systems. The board is optional for use at either 2 or 4 MHz, depending on the system. For systems requiring this option, and even includes a plug that accepts the connector from an INTEL hex front panel. Other features include:

• Full compliance with all IEEE 696-S-100 specifications (including timing specifications)

• Downward compatible with the vast library of ROM software

• 24 bit addressing allows access to 16 megabytes of memory

• Ideal for multi-user installations

• Designed for high speed operation to greatly increase system throughput (switch selectable choice of 2 or 4 MHz operation)

• Assembled/TESTED boards, choice of 3 or 6 MHz boards, quarter unit under the ECC high-reliability program

• Provision for adding up to 8 1/2 megabyte, 40 pin-board memory (7116/7732 EPROMs or 6116 RAMs—not included with board)

• On-board memory resident: can be disabled under software control to allow overloading RAM

• On-board fully maskable vectorable interrupts for interrupt drivers

• Power-on clear (PWC) generated SLAVE CLR and PRESET

• Selectable automatic wait state insertion for servicing M-100000—M-100000 or the on-board memory may be installed on any of the 16 M-100000 slots

• Automatic jump upon read or power-on to 256 byte boundary

• Non-maintainable or hot on 12 or 30 pin IEEE 696 space

• This powerful and flexible CPU board provides the sophisticated operation required by today's S-100 computers, while allowing for complete compatibility with older systems as well. But perhaps best of all, CPU Z is a cost-competitive with boards that do considerably more. When you need a second or third CPU board that is as powerful as the first, you will use as many as the selected S-100 systems. CPU Z is the answer.

Finally a floppy disk controller worthy of bearing the CompuPro name

is now available for integration into your S-100 system. The PDB011 floppy controller incorporates numerous features that were previously unavailable on any S-100 floppy controller board. PDB011 fully complies with the IEEE 696-S-100 standard. **INCLUDES DATA INITIALIZATION:**

• Third generation INTEL 8272C/MC ISA S-100 floppy disk controller

• High speed cycle stealing DMA interface for processor independent data transfer between system memory and floppy disk

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• Single or double density/ingrate or double ended capability

• Supports IBM 2140 unit selected formats

• 24 bit DMA addressing with data transfer across 64 boundaries for data transfer throughout the 16Mbyte memory map

• 10 mapped interface allows continuous system memory. **DISK I/O** accepts no memory access

• On-board hardware base EPROM for automatic startup

• On-board serial port for system status monitoring

• Board compatible with MMIO, DASD, CP/M-80 and CP/M-86

• CP/M-80 and CP/M-86 available for **DISK I/O**

• CPU based independent data transfer for operation up to 10MHz

• Fully architected DMA interface as per IEEE 696-S-100

• DMA based direct control for multi-user environments

• Up to 600K bytes per disk (5 inch drive) for an on-line total of up to 4 MB bytes if drives—double ended capability

• 100% reliability and 100% uptime—guaranteed

When creating the highest performing S-100 disk system available—today and tomorrow, **DISK I/O** provides the advanced capabilities required by high performance single and multi-user microcomputer systems. Whether designing a new disk system or upgrading a lower performing system, **DISK I/O** provides the best cost/performance ratio available today.

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• Meets or exceeds all IEEE 696-S-100 specifications (including timing)

• Fully static design eliminates the timing problems associated with dynamic memories

• Switch-selectable choice of 2 address lines conforming to the IEEE 696-S-100 extended addressing (16 megabyte) specification, or 16 address lines to read or bank select and older S-100 systems, memory addressing (including CompuPro, Alpha Micro, and others) as well as new systems conforming to the IEEE 696 extended addressing protocol

• Addressing protocol

• Ideal for multi-user installations

• CDS and Assembled/TESTED boards are designed for CPU speeds up to 10 MHz

• Board is addressable as 32K or 64K on any 4K boundary

• Each 4K row can be individually disabled via DIP switch

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**RAM 20** answers the high-density memory needed by every S-100 computer system—in a cost-effective and exceptionally well-designed package. Whether for 24 bit address systems or bank select systems, **RAM 20** provides economical and cost-effective mass storage.

## DISSAX

continued from page 40

page manual. There are, however, several disappointing aspects. In my opinion the document is not "tutorial" as claimed. Also, there is no reference in the document to error handling or messages. A partial disassembly of DISSAX indicates that some error-processing logic is present.

#### Summary

DISSAX is a utility program. Not all CP/M users will find an application for the product; however, it is an important tool for the assembly-language programmer. The choice of Zilog mnemonics for DISSAX output is, in my opinion, unfortunate since the standard assembler provided in the CP/M environment uses Intel mnemonics. Perhaps future versions of this program could incorporate a switch-selectable decoder or CECEX could include a suitable assembler of its own design.

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# InfoWorld Software Review

## Cross Clues, a word-challenge game for the Apple II

By Paul Hollingshead

Polishing your vocabulary skills in competition is the whole idea behind playing Cross Clues. The computer game is similar to crossword puzzles, hangman, Scrabble and Kriss Krosses.

The object of the game is to guess complete words based on the few letters that are shown. Your Apple keeps track of timing and scoring, letting you worry about strategy and the words. The program provides complete instructions on demand, making it easy

to play, even for people with no computer skills.

### Features

The game is played on an area that looks like a square crossword puzzle with seven boxes on a side. Usually, seven of the boxes are filled in, their location depending on the word pattern for that particular game. The remaining consonants, of the 21 in the alphabet, are shown in a block below the puzzle. As you "use up" each consonant

in a guess, it is removed from the list.

Before the actual play begins, players are asked to enter their names and to pick a time limit of one, two or three minutes for their turn. At the start of the game, one consonant is shown in its proper place on the puzzle. Players take turns guessing words. If you correctly guess a word, you get another word guess. If your guess is not correct, you can choose one of the consonants, and the program then shows

you all the places where that consonant appears.

You must use strategy to try to limit the clues that you leave for your opponent. The trick is to keep from leaving him any obvious words, and to force him to leave some easy ones for you. One method is to reuse a consonant that has already been guessed. That eliminates the possibility of giving any new clues.

You get a point for each new letter that is in the right place. If a five-letter

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All boards are assembled and tested.

## ExpandoRAM III

64K to 256K expandable RAM board



SD Systems has duplicated the famous reliability of their ExpandoRAM I and II boards in the new ExpandoRAM III, a board capable of containing 256K of high speed RAM. Utilizing the new 64K x 1 dynamic RAM chips, you can configure a memory of 64K, 128K, 192K, or 256K, all on one SBC-200 board. Memory address decoding is done by a programmed bipolar ROM so that the memory may be bit-switched configured to work with either COSMOS/MPK-type systems or with OASIS-type systems.

Extensive application notes concerning how to operate the ExpandoRAM III with Cromemco, Intersystems, and other popular 4 MHz Z-80 systems are contained in the manual.

MEM-65064A 64K A & T ..... \$495.00  
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MEM-65192A 192K A & T ..... \$785.00  
MEM-65256A 256K A & T ..... \$875.95

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Double density controller with CP/M 2.2



S-100 bus compatible • IBM 3740 compatible soft sector format • Controls single and double-sided drives, single or double density, 5 1/4" and 5 1/8" drives in any combination of four simultaneously • Drive select and side select circuitry • Analog phase-locked loop data separator • Vectorized interrupt operation optional • CP/M 2.2 disk and manual set included • Control/diagnostic software PROM included

The Versafloppy II is faster, more stable and more tolerant of bit shifts and "stir" than most controllers. CP/M 2.2 and all necessary control and diagnostic software are included.

IOD-1106A A & T with CP/M 2.2 ..... \$370.00

## SBC-200

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S-100 bus compatible • Powerful 4MHz Z-80A CPU • Synchronous/asynchronous serial I/O port with RS-232 interface and software programmable baud rates up to 9600 baud • Parallel input and parallel output port • Four channel counter/timer • Four maskable, vectored interrupt inputs and a non-maskable interrupt • 1K of on-board RAM • Up to 32K of on-board ROM • System monitor PROM included

The SBC-200 is an excellent CP/M board to have a microcomputer system around. With on-board RAM, ROM, and I/O, the SBC-200 allows you to build a powerful three-board system that has the same features found in most five-board microcomputers. The SBC-200 is compatible with both single-user and multi-user systems.

CPU-30200A A & T with monitor ..... \$995.95

## ExpandoRAM II

16K to 64K expandable RAM board



S-100 bus compatible • Up to 4MHz operation • Expandable from 16K to 64K • Uses 16 x 1418 memory chips • Page mode operation allows up to 8 memory boards on the bus • Phantom output disable • Invisible on-board refresh

The ExpandoRAM II is compatible with most S-100 CPUs. When other SD System's series II boards are combined with the ExpandoRAM II, they create a microcomputer system with exceptional capabilities and features.

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MEM-32631A 32K A & T ..... \$345.00  
MEM-48632A 48K A & T ..... \$365.00  
MEM-64633A 64K A & T ..... \$385.00

## COSMOS

Multi-user operating system

Multi-user disk operating system • Allows up to 4 users to run independent jobs concurrently • Each user has a separate file directory • COSMOS supports all the file structures of CP/M 2.2, and is compatible at the applications program level with CP/M 2.2, so that most programs written to run under CP/M 2.2 or SDOS will also run under COSMOS.

SFC-50009039F COSMOS on off disk \$395.00

## Multi-User System

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All boards are assembled and tested.

## MP/C-4

Intelligent communications interface



Four buffered serial I/O ports • On-board Z-80A processor • Four CTC channels • Independently programmable baud rates • Vectored interrupt capability • Up to 4K of on-board RAM • Up to 2K of on-board RAM • On-board firmware

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## InfoWorld Software Report Card

### Cross Clues

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Performance	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Documentation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ease of Use	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Error Handling	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

### System Requirements

- Apple II Plus
- DOS 3.3
- 48K RAM
- One disk drive

Price: \$29.95

Science Research Associates, Inc.  
155 North Wacker Drive  
Chicago, IL 60606

word had three letters correct previous to your turn, a correct guess of the word would earn two points. When a consonant is first used correctly, the program fills all the other squares in the grid where that consonant is needed. For example, if you guess the word *draft*, based on the clues—*af*—you would definitely get two points, and might actually earn four or five points if *r* and *t* are used frequently in the puzzle.

You indicate the start of the word being guessed by using comma and period keys to control movable arrows until they point to the first letter (or if that hasn't been guessed yet, a blank in the word. When appropriate, the program asks if the word you are about to enter will go down or across the grid.

The program next shows a large asterisk in the position of the first letter to be typed. For corrections, you can backspace by using the left arrow on the keyboard, or you can reset the pointer arrows by striking the space bar.

You can use several other commands during a game. By using three numeric keys or the escape key, you can suppress the sound effects, skip a

word guess, put the game on hold or start play all over again.

The winner of the game is the first person to get 21 points. When each player reaches 13 points, the time allowed for guesses is cut in half. Thus, the going gets tougher as you approach the end. You do have the option of cancelling the time cut.

#### Performance

The length limit of seven letters for each word cuts out many of the trickier ones, the words that are hard to learn. This hampers the usefulness of the game, for adults anyway. The difficulty level of the games on the demonstration diskette was about the same as an easy crossword puzzle. The manufacturer says that the 50 games on the retail diskette cover the range from easy to hard. The game might do best in a secondary-school English class.

Sound effects are used nicely in this game. Several bars of an appropriate tune are played when the diskette is booted. Tones signify good guesses, bad guesses and the end of the time allowed for each player's turn.

Playing Cross Clues is fun, but it won't keep you going for hours like an adventure game or Asteroids. While you are enjoying the game, it is polishing your vocabulary. The spirit of competition takes your mind off the benefits.

#### Ease of use

Learning the game is simple. When you boot the diskette the program asks if you want instructions. If you answer Y, the program explains the game and plays against you for a couple of sample turns.

Even when you play the real game, there are ample prompts. Forgetting to point the arrows at the first letter of the word, not the first blank, is a common minor mistake. Players that aren't

habitual computer users may need to be reminded to strike the return key after each word guess.

#### Error handling

The game is well armored. Inappropriate answers to the program's questions are simply ignored. If you type too many letters for a word guess, the program just ignores the extra letters. I didn't come across anything that could cause the program to stumble or get confused.

#### Documentation

One half-page sheet is all that comes with the program. One side contains a

dozen notes on playing the game and a handy grid for marking which of the 50 games you have played. The back side contains advertising and the license agreement.

Despite the brevity, nothing else is really required. The notes and the instructions the program gives you when you first boot up the diskette clearly explain the procedure for playing.

#### Support

Science Research Associates is an educational publishing firm in Chicago, and Cross Clues is presently its only offering. Company personnel

were willing to answer my questions, but didn't impress me as being a fully developed support group yet.

When asked, an SRA representative said the firm does not have additional volumes of puzzles on other diskettes, or any foreign language versions of the game. For now, the program is available only for the Apple II.

#### Summary

For a gathering of word-game fans or an English class, Cross Clues is a pleasant mix of vocabulary building and entertainment. The program gives plenty of instructions and doesn't require any knowledge of computers. ■

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## Autoscribe

*continued from page 37*

such as automatic page numbering.

The index provides easy access to all the information in the manual. The manual also gives you some recommended practices in the areas of document revision and control that can be quite useful.

#### Summary

AutoScribe II is a useful piece of software in spite of its limitations. Most of its operations are simple to understand and execute. Those that aren't are not too difficult to work around.

When you create large documents, you soon become aware of how critical disk space is. If Zenith Data Systems would make AutoScribe II usable on the current level of operating systems, and would correct some of the deficiencies noted above, it would have not just a good but an excellent word-processing system. ■

*This product is also being marketed as Electronic Typing.—Editors*

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## Apple

**Hi-Res Computer Golf** allows you and up to three other players to play an 18-hole round on your Apple with all the aspects of the real thing and more—five courses, a golf bag full of clubs, club-swing control, wind gauge, multiscreen fairways, contoured greens, sand traps, roughs, water, trees, high winds, scorecard, sounds no green fees and no waiting. Yelling "fore!" is optional. Hi-Res Computer Golf requires Applesoft in ROM, 48K, single-disk drive and DOS 3.2 or 3.3. Price is \$29.95. Avant-Garde Creations, P.O. Box 30160, Eugene, OR 97403.

**Loop-Hole** is a fast, high-resolution action game for two from Accent Software. You win by trapping your opponent in your trail of dots—if your opponent doesn't get you first. An Apple II with 32K and keyboard or game paddles are required. Price is \$29.95. Accent Software, 3750 Wright Place, Palo Alto, CA 94306.

Eiconics has reduced the price of the **Eureka Learning System** to \$495, down from the previous \$995 price. The "unbundling" of the user education from the software system fee allowed the reduction. The system provides a means for creating CAI material without prior programming knowledge. You can use graphics and special characters along with text material. A demo disk with three sample lessons and a copy of the teachers' guide is \$25. Eiconics, Inc., 200 Cruz Alta, Taos, NM 87571.

## Other

Shasta General Systems announces the **Parrot family of word- and data-processing business systems** based on the Xerox 820 microcomputer. Prices will begin at less than \$5000, including hardware, for a complete word-processing system. Two word-processing software packages—called WP One and WP Two—are available.

WP One features global search, 132-character horizontal scroll, variable pitch, double underline, superscript, subscript and more. WP Two includes an office filing system, document merge, automatic widow/orphan protection, multilevel system security and footnote tie-in. Several data-

processing packages are also available. Shasta also offers applications programs, such as Sorcim's SuperCalc. Shasta General Systems, 1329 Moffett Park Drive, Sunnyvale, CA 94086.

**CMAR** is a file-handling system by Cimarron Corporation for the Commodore CBM business computer. CMAR is a key-file access method that provides a foundation for Cimarron's Legal Time Accounting and Medical Accounting packages marketed by

Commodore. The CMAR program is compatible with all present Commodore disk subsystems utilizing the existing disk format. It is written in 6502 machine language and interacts directly with Commodore BASIC 4.0. Cimarron Corporation, 666 Baker Street, Suite 319, Costa Mesa, CA 92626.

Exidy Systems announces the **Financial Software Package**, designed to provide loan processing, installment lending and general banking ap-

plications to users of the Exidy computer. Loan-processing functions include creation, updating, file display, verification and reports. The installment section allows you to calculate annual percentage rate, days between dates and amortization.

The general banking software handles these functions, plus IRA projections, deposit/yield future value, discount note rebate and T-certificate calculations. Exidy manufactures the *continued on following page*

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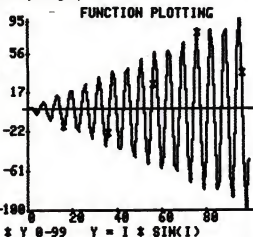
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*continued from preceding page*  
Sorcerer Personal Computer, System 80 Desktop Computer and Multi-Net 80 distributed computer systems. Exidy Systems, 1234 Elko Drive, Sunnyvale, CA 94086.

The **XZ80 Business Package** by Lamo-Lem is for the Sinclair XZ80 or MicroAce computers. The package includes Search & Save, which allows storage of text files on cassette and retrieval by keyword or phrase; VideoComp-4, which displays a screen worksheet with three columns and uses a keyboard overlay to perform operations involving entire columns; and VideoGraph, which produces bar graphs of the results obtained with VideoComp-4. A manual, reference cards, a color keyboard overlay and cassette are included. Price is \$9.95. Lamo-Lem Labs, Box 2382, La Jolla, CA 92038.

Micro Architect will provide ten **business packages** for the new IBM Personal Computer in the coming year. They will include general ledger, accounts receivable, accounts payable, payroll, data-base management, text formatter, inventory, mailing list

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# InfoNews/Hardware

## New peripherals

App-I-cache provides 304K RAM for the Apple II computer. The trick is disk emulation: App-I-cache is a 256K memory card that is treated as a diskette by software resident on the card itself. Sorrento Valley Associates, Inc., 11722 Sorrento Valley Road, San Diego, CA 92121.

A new low-power-consumption 64K static-RAM board from SSM op-

erates at 6 MHz and offers up to 8K of EPROM. The board supports extended addressing, appropriate for 16-bit and multitier systems. It sells for "less than \$850" from SSM Microcomputer Products Inc., 2190 Paragon Drive, San Jose, CA 95131.

The **Daisywriter 1000 printer** is a \$1495 daisy-wheel printer that features a cassette-encased print wheel for dust-free operation. It can use RS-232, 20-millamp current loop or Centronics 8-bit parallel interfaces, and it

incorporates three CPUs. Computers International, 3540 Wilshire Blvd., Los Angeles, CA 90010.



The Daisywriter 1000 printer



High-resolution green-phosphor monitor from Allen Associates

A high-resolution green-phosphor monitor compatible with most microcomputers is available from Allen Associates. It has a 12-inch screen and a lightweight case. Allen Associates, 21436 Bramble Way, Canyon Country, CA 91350.



Calcomp's new digitizer tablet

Calcomp has a new, low-priced digitizer tablet. Built around an 8085A CPU and providing RS-232 and 16-bit parallel interface capabilities, from 12X12 to 60X44 inches, that is! The resolution is 1000 lines per inch. California Computer Products (a.k.a. Calcomp), 2411 West La Palma Avenue, Anaheim, CA 92801.

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Zenith/Heath has added a Winchester disk drive to its business micro-computer line. The Z-67 provides about 10 megabytes of storage and incorporates a floppy-disk backup unit for another megabyte. With cables and interface card, the Z-67 costs \$5995. Zenith Data Systems, 100 Milwaukee Avenue, Glenview, IL 60025.



Zenith Data Systems's Winchester disk drive

A new static RAM card supplies 32Kx8 and 16Kx16 storage capacity for 8- and 16-bit systems. The access time is under 200 nanoseconds, and memory-management and control functions are supported. Assembled and tested, the board costs \$485; as a

kit, \$395, from I/O Technology, 29119 Flowerpark Drive, Canyon Country, CA 91351.



RAM card from I/O Technology

Dataroyal has introduced a new version of its IPS-7000 printer, and an up-

grade kit that allows current users to convert to the new features. The new IPS-7000-A printer allows variable-sized character printing. One application is bar-code printing. The IPS-7000-A sells for \$3080; the upgrade kit is \$250. Dataroyal Inc., 235 Main Dunstable Rd., Nashua, NH 03060.

## New systems

The Fluke 1720A from John Fluke Manufacturing is a small computer with a touch-sensitive screen (also small), designed for control and monitoring applications. It comes with one

continued on page 35

ITT Courier four-color terminal

ITT Courier, a subsidiary of the information behemoth, is selling a four-color display terminal. The colors are triggered by the field-attribute byte that normally selects protected or unprotected fields and high or low intensity. ITT Courier Terminal Systems, 1515 West 14th Street, Tempe, AZ 85281.

Computware now makes a board that expands the memory of the Radio Shack Color Computer from 16K to 32K.

The board, named the 16 Plus Board, plugs into the computer and fits under the RF shield cover inside it. No software modifications to existing software are required. The 16 Plus Board costs \$84.95. Computware,

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five features of the ProLink system, a new business computer system from a now company. The target market for the system is small-to-medium-sized offices. The system includes a local network, intelligent work stations, resource-management systems, which include shared disk and tape drives) and telephone control units. Basic and CORDL are supported, and the systems start at \$25,000. ProLink, Inc., 557 Central Ave., Boulders, CO 80301.

The terminal is available alone for \$1995. It is called the 1700A and it has a 16x40 display on a 5x9 screen, with 60 P.O. Box C9086, Everett, WA 98206.



The Fluke 1720A with keyboard and the 1730 A display (sold separately)



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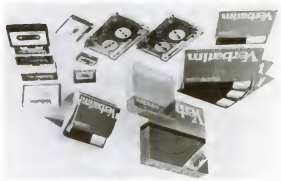
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shown a profit for a fiscal year yet, so why don't we help this poor folk out of their unbroken string of successive losses by offering plenty of SPAM?

I recently received my Osborne (Osborne Computers) computer. If you haven't seen that \$1795 marvel, you don't know what you're missing.

The thing looks like the dashboard of a cheap Japanese automobile—the only thing missing is a dollor of sin.

laid wood grain. The model black plastic is middle with milled and knobs and connectors, and when you operate it in the dark, you can never find the whistled washers. Oops! I mean reset button.

Perhaps Adam didn't drive an ill-sweaty or whatever they call Japanese Oels these days, and perhaps he doesn't mind having so spurtan a hint. I on the spread out in front of him. On the other hand, think that a large paid of deer to set on the back of the keyboard, a garter belt hanging in front of the five-inch monitor, and maybe a small blue bag hanging from the console would fully realize the aesthetics Adam is attempting to emulate.

A new language

I've been using Ada in certain newer languages, but what I crave is some really new languages, like D, FTH, COMPILE, VAL, IRLYN or UNBOL.

Just think of the statements and constructs that have never been real.

led on computers.

LINCHFAST

ONCE IN A WHILE

FOUR

unneeded loops

decompiled code

any that I want to see under any bl-

ble readers would tolerate such

presented my Christmas wish that (Don't

end money, but another 128K of RAM

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continued from page 31

disk drive, a real-time clock, a detachable keyboard and provision for remote-control operation. FORTRAN and BASIC are available. The computer costs \$8850.

The terminal is available alone for \$1995. It's called the 1780A and it has a 16x80 display on a 5x9 screen, with 60 distinct touch areas. John Fluke Mfg., P.O. Box C9090, Everett, WA 98206.



The Fluke 1720A with keyboard and the 1780 A display (sold separately)



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# InfoNews/Hardware

continued from preceding page

## New for integrators

A number of new products from semiconductor and electronic-component manufacturers have come to our attention recently, as well as some new products for the OEM, CAD and component-design markets:

Motorola has announced the first five parts in its **advanced low-power Shottky line of TTL circuits**, including two quad bus transceivers and three octal-buffer/line-driver circuits. Now available for sampling, they are

priced at \$2.60 for the transceivers and \$2.80 for the buffer/driver circuits.

Motorola has also dropped the price (and the power consumption) on its **2048x8 ROM**, has added a 16K16 floating gate EEPROM (MCM2801, \$7.20 in quantities of 100 or more), produced a series of four new application notes for 8-bit processors and added four new microcomputer chips to its line.

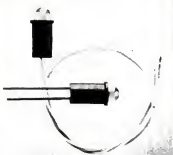
The new microcomputers are all 8-bit 6805 with CPU, clock, I/O, ROM, RAM and a timer. One version includes "phase-locked-loop logic," an-

other has an 8-bit EPROM and a third has A/D conversion. Some of these are available now, while others are due out in December. For details check with Motorola Inc., 3501 Ed Bluestein Blvd., Austin, TX 78721.



Computer on a chip from Motorola

303 North Oak Street, Inglewood, CA 90302. And "the industry's first diode quads and diode quad bridges" have been introduced in chip and package form by Dionics, Inc., 65 Rushmore Street, Westbury, NY 11590.



LED panel lamps from Data Display

A series of \$49 LED panel lamps that snap into place with no additional hardware required has been announced by Data Display Products,

## Typography...

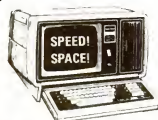
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# InfoNews/Hardware



Marathon, a new system for circuit-board testing

A new system for circuit board testing was just introduced by Computer Automation. **Marathon** is a move

away from what Computer Automation calls "the elusive super tester." The design is modular, with individual test modules linked to a resource manager. Computer Automation Inc., Industrial Products Division, 2181 Dupont Drive, Irvine, CA 92713.

An engineering work station for the design of electronic equipment is now being offered that lets engineers design hierarchically, from the top level of complex systems down to components. The **Logician** is a multiprocessor system connected by a multibus. The central processor is an 8086. Daisy

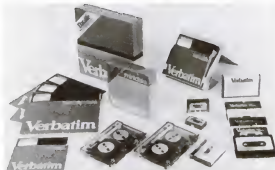
Systems, 2118 Walsh Avenue, Santa Clara, CA 95051.

The **Fujitsu SP830** letter-quality printer will be sold in the U.S. by InterSell. At least InterSell will be the first OEM for the printer: plans are to sell it with The Integrator Intek's interface board, installed. The Integrator facil-

itates interfacing the printer with many popular microcomputers. InterSell, 465 Fairchild Drive, Suite 214, Mountain View, CA 94043.

InfoWorld is unable to test every product announced in this section. All claims attributed to the products have been made by manufacturers or by firms marketing these items.

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# Book Reviews

## Books feature treatise on robots, probe into privacy

### The Year of the Robot

Wayne Chen  
dillithium Press  
\$7.95

The first half of this book is dull and didactic; the second half is childish and naive. Why, then, is it so touching and sweet?

The first part of *The Year of the Robot* is a series of essays on the "human

traits of robots." To Wayne Chen a robot—as distinguished from a crude machine—is any device that employs feedback mechanisms to constantly compare what it gets with what it wants. There are, of course, millions of such devices used in electronic and mechanical appliances. The familiar example that we encounter is a guided missile, constantly correcting course as it flies to its target.

Chen claims there are "robot-ossyncrasies"—human-like traits observable in robots. Robots, he asserts, are broadminded, even tempered and fair; responsive, reliable and visionary.

In other words, Chen sees a lot to admire in robots, and he thinks we can understand and improve the quality of life in our human society by studying them. He envisions an "engineering approach" to the problem of human existence, and he illustrates his vision with numerous diagrams and math formulas.

The second section of the book is the more endearing. It is a previously published science-fiction novel Chen authored under the pen name of Wayne Hawaii. In it, the fictitious inventor of the robot, Rob (pronounced "robe," for robot) Tains falls in love with journalist Helga McGee. The characters and their adventures embody the robotics-humanity philosophy Chen puts forth in the nonfiction half of the book.

Humanity has lavished acclaim and riches on the great engineer for expounding Chen's theories. He is the featured speaker at engineering society dinners, and he even speaks before a joint session of Congress. Tains owns a Porsche, a hideaway on the Long Island Sound and is head of his own aerospace company.

The love story of Rob and Helga is probably the most charmingly implausible story ever to be set in type. Consider this steamy scene from the pair's first date when Rob takes Helga back to her apartment:

"She planted a gentle good-night kiss on his lips, and said, 'Rob, it has been a terrific day. Thank you very much.'"



"And then she shook his hand, giving him a terrific grip, and winked and bade, 'Good night, Rob.' Half an hour after the handshake, Rob could still feel the grip."

The woman has a handclasp that would make Arnold Schwarzenegger wince.

This scene occurs just before the pair consummate their relationship:

"After a succession and repetition of looking at each other, embracing and kissing, Helga held Rob's two hands together, enveloped them with her hands and gave a terrific squeeze. And she said, 'Love is not a comma, but a period. A helluva grip of a period.'"

Helga recounts the incident from her childhood that inspires this peculiar observation and explains its special significance, but it still seemed obscure to me.

The explanation worked its magic on Rob, though, for the next thing you know:

"Now she again squeezed Rob's hands with a strong grip. With a slight contortion on his face, Rob smiled and

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chimed in unison with Helga, 'Love is not a comma, but a period. A helluva grip of a period!'

After reaching such heights of passion (and pain), the two naturally get married. But they are still a decidedly unconventional couple.

On their honeymoon, the two discuss transistors:

"Rob, are there sexes among the robots?"

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Their life is idyllic. The lovers become world travelers. They tour the Kremlin and talk about robots. It seems as if no conflict will ever cross their paths.

But toward the end of the book,

trouble crops up. Heiga attends a Women's Lib meeting and becomes convinced that marriage is a form of slavery and a fraud. She leaves Rob and seeks fulfillment as a star in a nude stage show.

At this troubled time in her life, Helga seeks advice from her father, Frank, who sees the problem in robotic terms, as just a case of young, impetuous harmonic motion:

"Frank then pleaded, 'Helga, when the overshoots in your system dampen out, will you promise to return to Rob?'"

I won't tell you the story's ending, but its charming quality is diminished with a technical discourse in the last chapter. Nevertheless, I enjoyed Chen's whimsy.

Why did I like this book so well? Well, when I was a kid, my notions of the world and how it operated were silly and naive. But my feeling about my secret self—my real capacities and inner goodness—was strong and glorious. My childhood fantasies, influenced by stories of great scientists, inventors and science-fiction heroes, expressed my secret heart—my desires and enthusiasms, my romanticism and nobility. In my dreams these splendid qualities were always fully

expressed and richly rewarded by a grateful world.

*The Year of the Robot* is naive and unintentionally funny. But if you're at all prone to nostalgia, I predict that you, too, will find this book immensely touching. It will remind you of a time when you still had dreams.—TS

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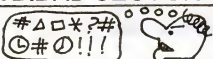
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## All I want for Christmas is my...



### By Minnie Floppy

In case you haven't looked at a calendar lately (most computer users don't), it is almost time for the great sleigh to make its yearly flight, bearing gifts.

I had been considering getting hockey and doing something on the order of

Twas the night before Christmas,  
and all through the disk  
Not a creature was stirring  
not even 8 bits.

but I didn't think you astute and erudite readers would tolerate such folderol, so I decided instead to present my Christmas wish list. (Don't send money, but another 128K of RAM would do nicely.) Without further ado, here's what I want to see under my bi-

nary XMAS tree this year:

### Plenty of SPAM

You all know that ROM stands for "read-only memory" and that RAM stands for "random-access memory." Perhaps some of you even remember the celebrated WOM (write-only memory) that made the rounds about five years ago. I've got plenty of all of these goodies—what I want is some "sequential-process access memory" (SPAMI).

As Monty Python fans know, everyone loves SPAM—it goes well with anything. So fellow SPAM lovers, let's get off our fannies and unite. I'm sure we can talk Zilog into making the sequentially-accessed memory we dearly love. After all, Zilog has never

shown a profit for a fiscal year yet, so why don't we help the poor folks out of their unbroken string of successive losses by ordering plenty of SPAM?

### Osborne decorations

I recently received my Osborne I computer. If you haven't seen this \$1795 marvel, you don't know what you're missing.

The thing looks like the dashboard of a cheap Japanese automobile—the only thing missing is a dollop of simulated wood grain. The mottled black plastic is riddled with similar shaped knobs and connectors, and when you operate it in the dark, you can never find the windshield washers. Oops! I mean reset button.

Perhaps Adam drives an lh-suzu or whatever they call Japanese Opels these days, and perhaps he doesn't mind having so spartan a plastic vista spread out in front of him. I, on the other hand, think that a large pair of dice to set on the back of the keyboard, a garter belt hanging in front of the five-inch monitor and maybe a small litter bag hanging from the contrast knob would be the final touches that would fully realize the aesthetics Adam is attempting to emulate.

### A new language

I'm getting tired of the old languages I've been using. Ada is certainly newer than Pascal, but what I crave is some really new languages, like D, FITH, COMPLEX, VALTRAN or UNBOL.

Just think of the statements and constructs that have never been realized on computers:

UNCRASH  
FASTER  
SLOWER  
ONCE IN A WHILE  
DON'T  
FORE  
BUG OUT  
untested loops  
decompiled code

I'd also like to have a command called GEDUNHEIT, so that I can stop saying that my programs are nothing to sneeze at.

Languages with labels should also be stamped with the government-endorsed "do not remove this label, or you may be fined" message.

In short, I'm tired of FOR/NEXT loops, DOs and line numbers. This Christmas I'd like to find a nice new language when I unwrap my presents—it doesn't even have to have documentation, as that would spoil some of the surprise.

### What I don't want

No Christmas wish list would be complete without a list of what I don't want. There's only one thing I don't want, and that's another T-shirt from a reader which says that "I have dual minnie floppies."

Come on, fellas, give me a break. The way I eat, I'm surprised none of you have sent in a "Mine are double density" T-shirt. If you have to send me a T-shirt, just make it say, "Who is Minnie Floppy?"

## Next Time

Our next issue of InfoWorld might be called "Fear and Loathing in Silicon Gulch." But there's no need for you to be frightened. We'll have a special section on computerphobia. In it, our fearless reporters will examine such topics as how manufacturers overcome customers' fears and how arcades and pizza parlors are combining to serve as therapists.

A fear of the unknown provides the stuff of which great fiction is made. We'll see why some noted science-fiction writers think we should worry about the advent of computers.

Our writers will also wrap up their coverage of the COMDEX show with more information and analysis of what we can expect from the micro-computer industry during the coming year.

Our software reviews will include a text editor and assembler called Zen, from Zenrad Controls, and Reformatter, from Micro Tech Exports.



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